FLIGHT

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To Our Readers.

The Editor offers his best wishes for Christmas and the Coming Year.—December 19, 1930.

EDITORIAL COMMENT

The Indian Frontier Again

WE have in the past more than once expressed doubts as to whether the Royal Air Force could work with the same efficiency over the hil's of the North-West Frontier of India as it shows in its control of Iraq and Transjordan. Plains and hills are two very different propositions for aircraft. In our last issue we commented on the danger which the officers and men in the aeroplanes run when flying over mountainous country in single-engined machines. But all the problems of the N.W. Frontier would not be solved if the air squadrons there were equipped with twin-engined bombers. The question would still remain whether attack from the air was the most effective way of dealing with recalcitrant tribesmen. On plains we know that it can be very effective, and the air control of Iraq is admittedly a very great success. It is difficult to get an impartial opinion from the N.W. Frontier, for few men feel themselves competent to offer any opinion on a point of tactics except the officers of one or the other service; and they are naturally prone to think the best of their own service.

Within the last few days, however, a very trenchant opinion has been expressed by the special correspondent of the *Daily Telegraph*, Mr. Ellis Ashmead-Bartlett. He is a very experienced war correspondent and his opinion must always be listened to with respect on a military matter. In two vivid and emphatic articles, he has given it as his opinion that (1) aircraft are not a very effectual weapon on the Frontier; (2) that the Royal Air Force has been wrongly employed there; and (3) that friction

between the Army Command and the R.A.F. Command has led to a position which is "highly unsatisfactory, dangerous, and absurd."

Though FLIGHT is published in London, its staff is composed of human beings, some of whom have travelled a bit in their time, and we do not therefore admit an entire ignorance of the conditions of the N.W. Frontier of India. Consequently, the first charge stated above does not very much surprise us. Pathán villages and Pathán *lashkars* must be among the most unpromising targets ever set for bombing aeroplanes. When a Pathán has his blood up and really means business, his aversion to the destruction of his villages is moderate but could not be described as intense. It's ill taking the breeks off a Highlander, or, to express the same sentiment in more classical language, *cantabit vacuus coram latrone viator*. In plain English, a very poor, hardy, fighting man does not regret the loss of all his possessions so much as a rich merchant feels an additional sixpence on the income tax. As for the *lashkars*, or clan armies, they do not wear uniform, and their dirty white clothing blends with the rocks on the mountain sides and makes an almost perfect protective colouring. They have no transport columns. It is easy for such an army to scatter, and then they present a very poor target indeed. The precipitous nature of the hillsides still further reduces the effectiveness of bombs. To all this must be added the fact that thousands of the most martial tribes proved in France, Iraq, and Palestine, that they could steadfastly endure bombardment from modern artillery. To those who know the Pathán there is nothing extraordinary in the fact that some of our old sepoys should now be out against us. The young men, too, are doubtless just as brave as their fathers who fought in the great war. So charges of ineffectiveness against the Royal Air Force on the Frontier do not surprise us.

What does surprise us in the charges brought by Mr. Ashmead-Bartlett is that the Air Force in India should claim, and should be granted, independence of the Army Command. Dual control in war has hardly ever proved anything but disastrously mistaken policy. In Iraq, Aden, and Transjordan the Air Officer Commanding is put in supreme command, and if there are Army units in any of those countries they are very properly put under his command. India, so common sense would dictate, must be either an Army problem or an Air Force problem. Whichever is considered the responsible service should be put quite clearly and unmistakably in control over the other. To us it appeals that in India the Army should be the responsible service. Even if the R.A.F. had proved itself more effectual than it seems to have done in dealing with these unruly scattered tribes, the Army would still seem to be the proper service to undertake the responsibility for defence, because unruly tribes are not the only consideration. The possibility of a first-class invasion from the North-West, an occurrence which has happened so often in the history of India, must always engage the attention of the Indian General Staff. He must be a very whole-hearted partisan of aircraft who would think air power capable of holding the Frontier passes against the horse, foot, artillery, and aircraft of, say, Soviet Russia. Therefore the defence of India must remain the responsibility of the Army Commander-in-Chief. It follows from that premiss that all the forces in India should be under his command and at his disposal. That, we always imagined, was the actual situation. The true and proper rôle of the Air Force in India, inevitably as it seems to us, is that of an Army air arm. Of course, no military expeditionary force ever does march out from the base stations without co-operation from the air. But, according to Mr. Ashmead-Bartlett, this is only an occasional function of the R.A.F. In the picture which he draws, the Royal Air Force aspires to the privilege of waging war on its own. What, we may ask, would be thought if any military units in Iraq and Transjordan claimed a similar privilege? Very properly, they would be told that their duty was to obey the orders of the A.O.C. and to carry out his plan of campaign. The position is, or should be, reversed in India.

The picture drawn by Mr. Ashmead-Bartlett is so amazing and so disquieting that we cannot help wondering if it is not in some particulars too highly coloured. We should not dare to cast any doubts on the veracity or competence of such an experienced correspondent; but it is a fact which should never be forgotten—though too often it *is* forgotten—that there are always two ways of telling a true story. A man, even a civilian, may become deeply attached to one fighting service, and his views may be coloured by resentment at claims, revolutionary or reactionary as the case may be, put forward by another fighting service. We have known cases where one or other of the older services has thrown away advantages which it might have enjoyed if it had used aircraft to the best advantage—the Battle of Jutland being a case in point—and we have often heard extravagant claims of the "Sink the lot; sack the lot" description put forward by upholders of aircraft whose enthusiasm has blinded their reasoning powers. Truth usually lies somewhere between the two extremes. There are circumstances in which aircraft can profitably take charge of affairs, while in other circumstances it does its best service as an "arm" of one of the other services. Dual control, however, has never had anything to recommend it. If the Royal Air Force is not to take supreme control of the defence of India, and we cannot believe that the time is yet ripe for such a development, then the Royal Air Force should be in India as an arm of the Army. There should be no difficulty about providing the General Staff with information as to the abilities and limitations of the aircraft. Used on the right occasion and in the right way, their usefulness cannot be exaggerated. Wrongly used, they may merely "queer the pitch" of the Army without securing that degree of success which it should be the aim of everyone to secure. If Mr. Ashmead-Bartlett's statements cannot be denied or toned down, then we think that the state of affairs which he describes should be remedied at once.

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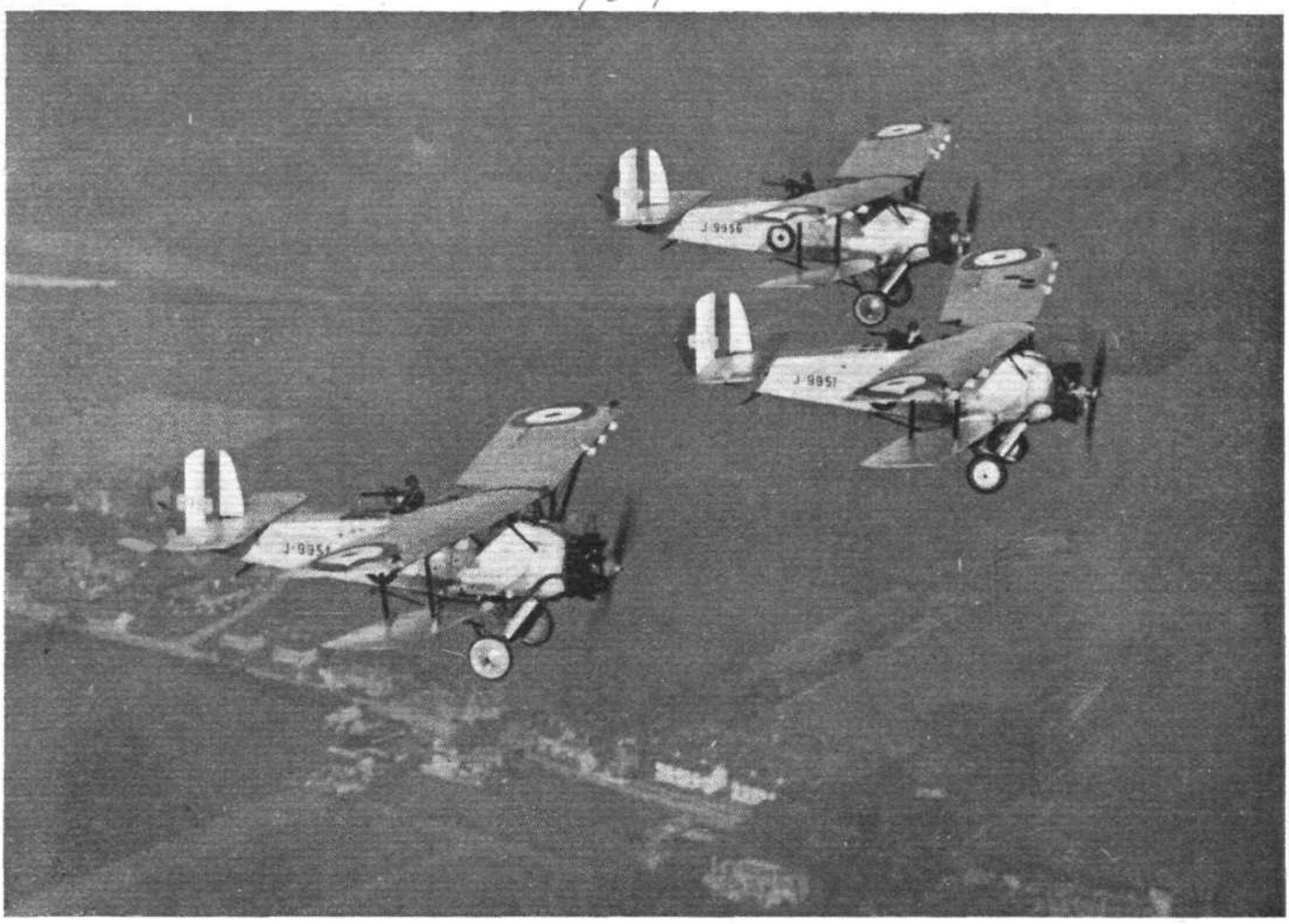


No. 2 (A.C.) Squadron. A flight practising formation flying with the air gunners ready for action. (FLIGHT *Photo.*).

No. 2 ARMY (CO-OPERATION) SQUADRON, ROYAL AIR FORCE

By MAJOR F. A. de V. ROBERTSON, V.D.

THE senior squadron of the Royal Air Force is not No. 1 but No. 2. The apparent anomaly dates from the days of the Air Battalion of the Royal Engineers, which was organised in two companies, of which No. 1 dealt with airships and No. 2 with aeroplanes. On the formation of the Royal Flying Corps (Military Wing), No. 2 Company became No. 2 Squadron, and on the outbreak of war No. 2 was the senior unit of the corps when it went overseas to France. In sober fact, No. 2 Squadron is to the Royal Air Force what the Coldstream Guards are to the Army. Its existence only dates from 1912, but, nevertheless, one thinks of this squadron with awe, as the senior veteran of a great company of gallant squadrons.

No. 2 Squadron began its separate existence at Farnborough under the command of Major C. J. Burke. It was the first squadron to move as a complete unit from its parent depôt to a new station. This move was made in February, 1913, when it proceeded by air and road to Montrose. The aeroplanes then on charge were mainly B.E., Maurice Farman, Breguet, and Cody machines. In September of that year six machines of the squadron flew the Irish Sea to take part in manœuvres of the Irish Command.

Major Burke, the first C.O., served in the ranks in the South African war, and at its close received a commission in the Royal Irish Regt. He learnt to fly in 1910 in France. He flew the first B.E. machine, a type which was produced at the Royal Aircraft Factory by the drastic repair and reconstruction of a Voisin pusher with a 60-h.p. Wolseley engine.

The outbreak of war found the squadron still at Montrose, and equipped with B.E.2 aeroplanes. On August 13 the squadron flew across the Channel to Amiens, and of all the R.F.C. the first to land was Lieut. Harvey-Kelly, of No. 2. This officer was mortally wounded on April 29, 1917, in a fight of three Spads of No. 19 Squadron against Richtofen's Circus. The three Spads had deliberately gone out to look for the Baron, and had found him. They are said to have shot down five Germans before they were all brought down behind the German lines.

The First Enemy Aircraft Down

On August 20 No. 2 Squadron carried out its first reconnaissance flight, the pilot being Major C. A. H. Longcroft and the observer Capt U. J. D. Bourke. Both these officers are still alive, and both reached high rank in the R.A.F. Five days later No. 2 Squadron achieved the distinction of driving down the first enemy aeroplane. Lieut. (afterwards Lieut.-Col.) W. H. C. Mansfield, with Harvey-Kelly as observer, attacked an enemy monoplane which was behind our lines during the retreat, and forced it to land. The Germans escaped into a wood, but the B.E. landed near, and the British pilots intended to fly the monoplane to their aerodrome. Before they could do so, some British soldiers came up and destroyed it. The only weapon which Harvey-Kelly had was a revolver, and the Germans (so Col. Mansfield told the present writer) must have been frightened into landing.

The first battles of Ypres broke out on October 19, 1914, and No. 2 worked mostly on reconnaissance for the 1st Corps. Next month the R.F.C. was reorganised into wings, and Maj. Burke was promoted to Lieut.-Colonel and given command of the 2nd Wing, Nos. 5 and 6 Squadrons. He was succeeded by Maj. G. W. P. Dawes, and later by Maj. T. I. Webb-Bowen. Nos. 2 and 3 Squadrons formed the 1st Wing. Two flights of No. 2 worked from Merville and the other from St. Omer.

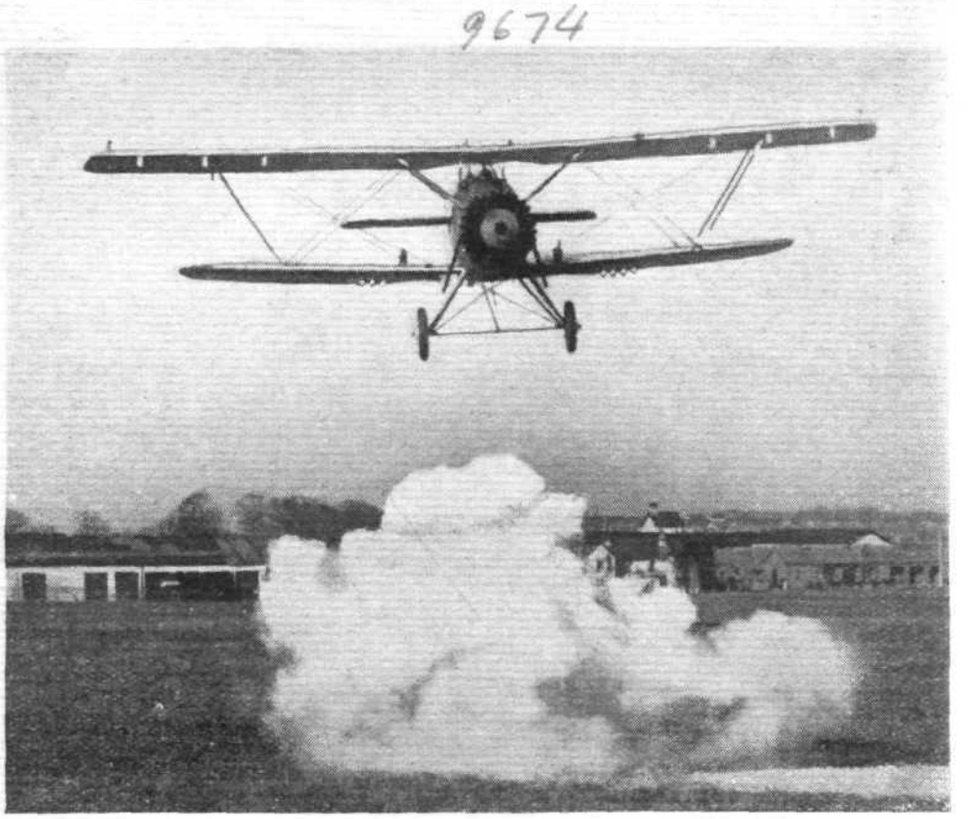
By this time a new task for the R.F.C. had begun to develop, namely, spotting for the artillery. At first signalling was carried out by means of Very pistols or lamps. Wireless signalling was also beginning to develop, and in February,

1915, a flight of wireless machines was allotted to No. 2. This flight speedily proved its value at the battle of Neuve Chapelle in March, when the main air work fell upon the 1st Wing.

The First Air V.C.

This battle also brought out the value of bombing the railway lines and junctions of the enemy, another function for the R.F.C., on which they rapidly specialised. It was this new function which won for the R.F.C. its first Victoria Cross, and it was No. 2 Squadron which provided the hero. Sad to relate, the award could only be made posthumously.

The incident occurred during the second battle of Ypres, the fight always to be remembered for the nefarious gas attack made on April 22. Four days later, on the 26th, the British made a counter-attack which stopped the German advance. The present writer well remembers that day, for he was with the Lahore Division which played the chief part in the counter attack. On the ground, not far from St. Jean, one Victoria Cross was won by Jemadar Mir Dast of the 58th Rifles, Frontier Force. In the air over Courtrai, another Victoria Cross was won by 2nd-Lieut. W. B. Rhodes-Moorhouse, of No. 2 Squadron. He was sent to drop a 100-lb. bomb on the railway junction at that place, so as to stop the supply of German reinforcements. He dropped it duly from a height of about 300 ft., and while doing so came under heavy fire from rifles and machine guns in the belfry of the church. He was hit in the abdomen and his machine was damaged. He turned towards the lines, flying at only a few hundred feet, and received other wounds in his thigh and in one hand. Despite his wounds, he covered the 35 miles and landed on the aerodrome at Merville. He made a full report before going to hospital, where he died next day. Before he died he received a message from Lord French saying that but for pressure of urgent work the Commander-in-Chief would himself have visited 2nd-Lieut. Moorhouse to express his admiration of his courage and the way in which he had carried out his duties.



An Atlas of No. 2 (A.C.) Squadron bombing a ground target. (FLIGHT *Photo.*)

In June, 1915, Maj. J. H. W. Becke took over the command of this squadron from Maj. Webb-Bowen, and in November he, in turn, made over to Maj. C. F. de S. Murphy. In April, 1916, he made over to Maj. R. A. Cooper, who commanded the squadron until August, 1917, when he was succeeded by Maj. W. R. Snow, M.C. In January, 1916, the R.F.C. was re-organised into Brigades. No. 2, with Nos. 3, 10, and 16, made the 1st Wing, which became a Corps Wing in No. 1 Brigade. The establishment was increased in June from 12 to 18 aeroplanes, No. 2 having on charge 10 B.E.2.C. and eight B.E.2.D. machines.

The squadron played its full part as a corps squadron in bombing and artillery observation during the Somme battles and the Arras offensive. In the summer of 1917 it was re-equipped with Armstrong-Whitworth machines. These aeroplanes often proved able to hold their own in fights against enemy scouts (fighters), even when numbers were against them. One aeroplane of No. 2 Squadron was once attacked by six Albatros scouts over Hulloch Wood but drove them all off.

Another Victoria Cross

On March 27, 1918, during the great German offensive, 2nd-Lieut. A. A. MacLeod and Lieut. A. W. Hammond (as observer) were on special low-flying patrol when they were attacked by eight enemy triplanes, which dived at them from all directions. By skilful manœuvres, the pilot allowed his observer to fire bursts at each of them in turn, and three were shot down out of control. The pilot was hit five times and the observer six times. Then the tank of the Armstrong-Whitworth was set on fire. MacLeod climbed out on to the port bottom plane and worked his joystick from there. He kept the flames to one side by side-slipping, and all the time Hammond kept on firing until the machine crashed in "no man's land." The enemy trenches opened heavy machine-gun fire, but MacLeod pulled Hammond away from the burning wreck into some sort of shelter. He received a sixth wound while doing so, and then collapsed from exhaustion and loss of blood. The Victoria Cross fitly rewarded the wonderful gallantry of MacLeod.

In August, 1918, Maj. P. G. Ross-Hume took over command from Maj. Snow, and remained in command until February, 1919, when the squadron was reduced to cadre and returned to England. Its headquarters were at Oranmore, Co. Galway. In April, 1920, the squadron was brought up to establishment again, and equipped with Bristol "Fighters," which it continued to use until the issue of the "Atlas." It has been moved several times since the war, and it hardly seems probable that its present station, Manston, will remain its final and permanent home. The present C.O. is Sqdn.-Ldr. S. E. Toomer, D.F.C., *p.s.a.*

Work and Training

Throughout the war the work of No. 2 Squadron was co-operation with the Army. Since the war, it has definitely become an Army Co-operation Squadron. It is not concerned with Air Defences of Great Britain or with the Fleet Air Arm. Its function is to work with the ground troops, infantry, artillery, tanks, and cavalry. It has to serve these troops in every way in which aircraft can possibly be of assistance to fighters on the ground. In turn, it has to take over what was once throught the special function of the cavalry, namely, reconnaissance; it has to do the duties of the artillery F.O.O.; it has to keep the infantry informed of "what is on the other side of the hill"; it has to aid the engineers by bombing bridges and railway lines which they would blow up if they could reach them; and, in addition to all this, it has to act itself as an agent of destruction by attacking the enemy troops with bombs and machine guns. The work of a pilot in an army co-operation squadron is more varied than that of any other pilot in the Royal Air Force, and it is as exacting as that of any other. And, if no protective fighters are available, the army co-operation machines must fight to the best of their ability when they are attacked by enemy aircraft. The machines supplied to these squadrons must be quite as versatile as the pilots themselves. For many years no aeroplane could be found which was more suitable for this class of work than the Bristol "Fighter" with Rolls-Royce "Falcon" engine. The present standard type is the Armstrong-Whitworth "Atlas," with Armstrong-Siddeley "Jaguar" engine. No. 2 Squadron is well used to Armstrong-Whitworth aeroplanes, for, as mentioned above, it used the old type of Armstrong-Whitworth during the latter part of the war.

It is a peculiarity of Army Co-operation squadrons that they have no airmen pilots. The pilot is always an officer, for

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Picking up a message from the infantry. (FLIGHT *Photo.*)

piloting is only one part—one might almost say a small part—of his duties. He has to be using his very highly trained brain the whole time, and how he manages to do all that he has to do with only one pair of hands is one of the mysteries of the Royal Air Force. He has an air gunner to assist him, and he too has a very busy time while the machine is in the air. His duties do not merely consist of firing the rear gun when the machine is attacked or attacking.

The pilots selected for army co-operation work need to show special qualifications, but they do not receive any special training before they join a squadron. They come from the usual sources of supply—namely, Cranwell, the Universities, Short Service officers, and from officers seconded from the Army. After joining a squadron the new pilots receive instruction in the less specialised subjects, such as map-reading, use of front and rear guns, bombing, pilotage, signalling, etc. As soon as possible they are sent for a three months' course to the School of Army Co-operation at Old Sarum, and there they receive very thorough teaching in signals, co-operation with the different arms, in military tactics, and in everything else which it behoves a man to know who has to be (to misquote Kipling) "soldier and airman too." At the end of this course they know enough to be able to carry out simple co-operation duties.

It should be noted that army co-operation aircraft work singly and not in formation. This calls for a high standard in the individual. Still, it is wise to practise formation flying, and one of our photographs shows a flight ready to meet an attack from the rear. Whether regular formation flying would be found necessary in war is a matter for speculation. In the Great War it was often found necessary to send out more than one reconnaissance machine when fighters were not available to protect the one. If the army aircraft are ever called upon to do long-distance patrols, it would seem that they must either have an escort or else fly in formation. At present they are required to undertake close reconnaissance and medium reconnaissance, and their machines are specially designed in accordance with the specified duties.

After returning from Old Sarum, the new pilot receives training with his squadron. The individual training period commences in October and lasts until the end of March, but individual training never really ceases throughout the year. The old proverb that one is never too old to learn applies with especial force to air pilots, and in particular to army co-operation pilots. A flight may be detached for co-operation with artillery during practice camp, but it does not confine itself to artillery only. The officers are always being taught and always learning. During the individual training period, officers pass their annual tests in ground subjects, ground firing with Vickers and Lewis guns, rifle and pistol courses, gas training, etc. At the same time, a course of lectures is arranged which covers law and administration, military, organisation and tactics, and other subjects, as well as those more directly concerned with army flying work. In April the whole squadron goes to a R.A.F. practice camp for annual air firing and bombing practice. Artillery practice camps begin in May, and at least one flight from a squadron is detached for training with artillery from May until August

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Preparing for vertical photography. The camera is inserted under the wireless panel, seen on the ground. (FLIGHT *Photo.*)

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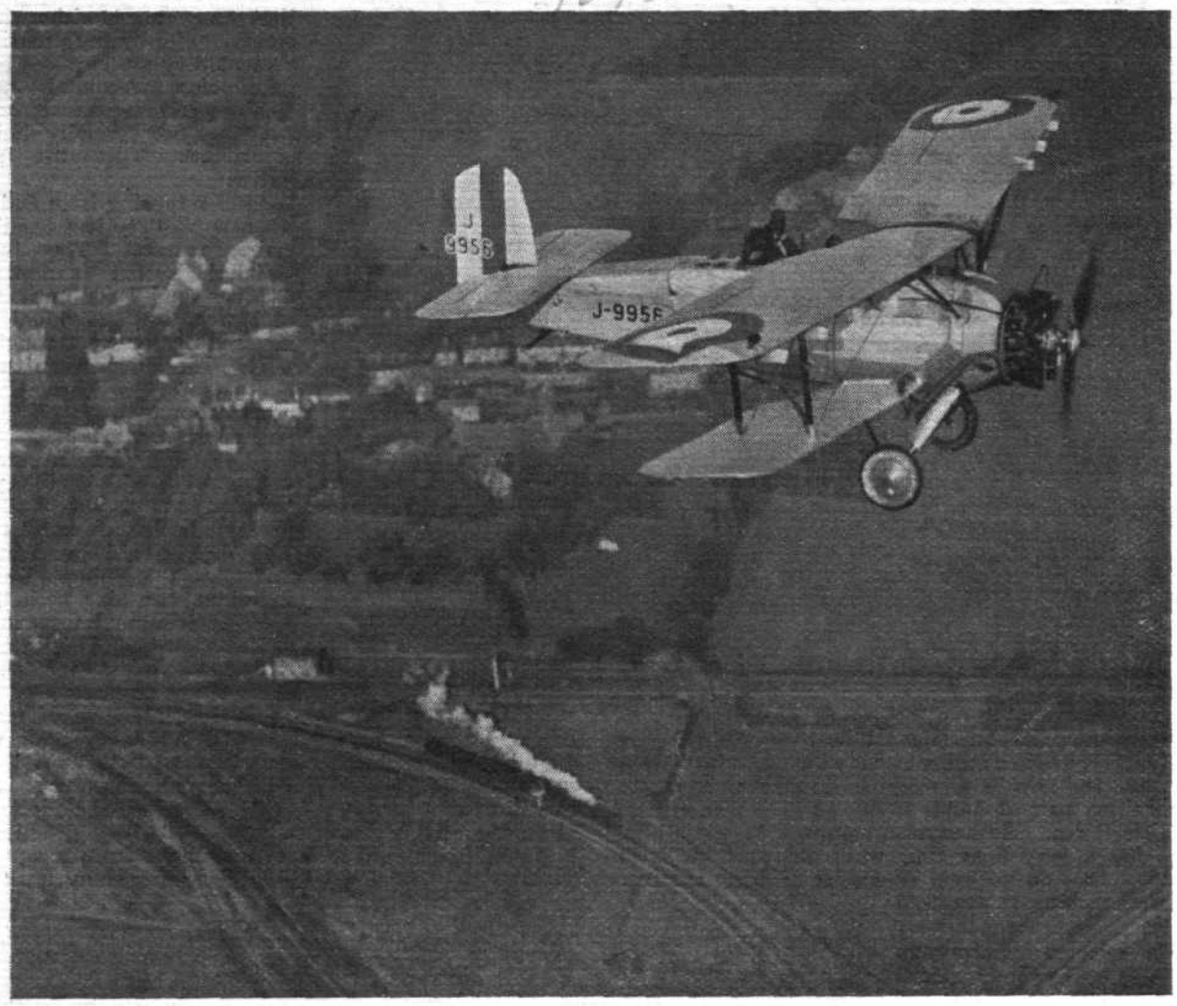

An Atlas of No. 2 (A.C.) Squadron photographing a railway junction. (*FLIGHT Photo.*)

Meanwhile the other flights join in the battalion and brigade training of the infantry. In August and September the Army starts divisional training, and usually the whole squadron takes part and goes under canvas in the manœuvre area. In addition to work with the regular troops, the army co-operation squadrons work with the Territorial Army and with the Officers' Training Corps.

All the army Co-operation squadrons are organised under No. 22 Group of the Inland Area, R.A.F. The unit, whether it be a flight, a squadron, or a wing, receives its operation orders from the Army unit under which it is working. The real unit is the squadron. Wings are only formed on occasions and temporarily. Flights are not self-contained units and can only remain detached for short periods. The general rule is to allot one squadron to an Army division. The squadron commander keeps the divisional General informed of the number of aeroplanes available from day to day. The General may use these aircraft as the situation demands. For example, during an approach march a large proportion of the machines would be devoted to reconnaissance, but when the situation became stabilised the artillery might require help from the majority of the machines. The squadron moves camp in accordance with the movements of the division, and it is desirable to keep the landing ground as near to the divisional headquarters as possible. The squadron commander, however, is responsible for the actual moves which the squadron makes. In general, it may be said that the Army commander decides what he wants the aircraft to do, and the R.A.F. officer concerned carries out the work according to his own discretion.

It is fairly safe to say that only the British character could make such an arrangement work without friction. The squadrons belong to the Air Ministry, but exist and work and have their being for the benefit of the War Office. Opportunities for friction must occur repeatedly, but then the British genius for compromise and for give-and-take comes to the rescue and averts disaster. Anyone who has visited one of the Army Co-operation squadrons, and seen the relations which exist between the Army and the R.A.F. officers, as well as noting the keen interest which the latter take in all which concerns the Army, must feel convinced that the relations between the two services are of the happiest.

Our Air-Mail Stamps

THE Postmaster-General, replying to a question in the House on December 15, put by Mr. Everard, who asked whether, in view of the fact that some parts of the British Empire are using air-mail stamps, he will reconsider his decision and issue special stamps for this service in Great Britain, said that the blue air-mail labels issued free of charge were more suitable for the purpose of distinguishing air-mail letters, and he was not prepared to authorise the issue of special postage stamps.

M. Bleriot's Cup

M. LOUIS BLERIOT has offered a challenge cup, to be won by the first man to attain a speed of 1,000 kilometres (625 miles) per hour for over half-an-hour on land, sea, or in the air. The first winner of the cup will have it held for him by the aero club of his country until his speed is beaten.

Royal Aero Club Christmas Closing

THE Club will be entirely closed from 7 p.m., on Wednesday, December 24, 1930, to 8 a.m., on Monday, December 29, 1930. The Club will also be closed on Saturday, January 3, 1931, from 3 p.m. to midnight for the Club Staff Dance.

And the London Aeroplane Club

THE London Aeroplane Club will be closed during the Christmas Holidays, from December 22 to 29, 1930, both days inclusive.

The Royal Air Force Club and Christmas

THE Royal Air Force Club will be closed from 2.30 p.m. on Monday, December 29, until 12.30 p.m. on Tuesday, December 30 (for the purpose of holding the annual staff dance) except in so far as affects bedroom accommodation (with breakfasts only) to residents and members, who have engaged bedrooms prior to noon on December 29. The club will remain open during Christmas holidays.

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THE ROBINSON "REDWING MARK II": Three-quarter front view. (FLIGHT *Photo.*)

THE ROBINSON "REDWING MARK II"

Armstrong-Siddeley "Genet" Engine

DESIGNED by Mr. John Kenworthy and built by the Robinson Aircraft Co., Ltd., of Stafford Road, Croydon, Surrey, the "Redwing II" follows very closely the lines of the prototype "Redwing I," but minor improvements have been made here and there where experience with the first machine indicated such changes to be desirable. It may, in fact, be taken for granted that such little snags as were found in the first machine have been entirely avoided in the second, which is the actual production type, and a batch of which are now in course of construction at the new works which the Robinson company has established at Waddon.

Simplicity, robustness, and ease of handling were the aims of Mr. Kenworthy in designing the "Redwing," and it was desired to use the side-by-side seating arrangement in order that the occupants might be able to converse without the use of telephones, while if the machine was to be used for school work, the side-by-side arrangement would enable the pupil to follow closely exactly what the instructor was doing, and conversely, when the pupil took charge, the instructor could watch him closely and correct faults at an early stage, before the initial faults became fixed habits.

It is by no means an easy matter to design a fuselage for side-by-side seating without making it of unsightly width, unpleasing to the eye, and inferior in the matter of aerodynamic efficiency. Mr. Kenworthy has certainly succeeded in at least the first of these two difficult problems. In spite of its side-by-side seating, the "Redwing" does not look particularly portly, and in fact, the lines of the whole machine are very pleasing to the eye. That Mr. Kenworthy has entirely succeeded in the second respect is, perhaps, open to doubt. Given equal drag coefficients, the fuselage with the greater cross-section must necessarily have a higher drag; but in the "Redwing" it would seem that quite a good deal of the extra drag due to width has been regained by taking care over the form of the fuselage. In any case, the fact

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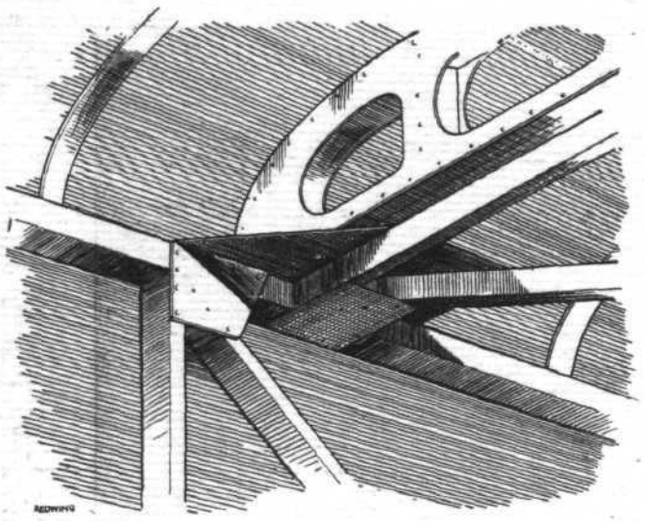
THE ROBINSON "REDWING MARK II": This side view shows that the lines of the fuselage are good, in spite of the side-by-side seating. Note the unusual shape of the rudder, which gives the machine a distinctive appearance. (FLIGHT *Photo.*)



Details of the fuselage construction. The covering is plywood, except the bottom, which is fabric. (FLIGHT *Sketch.*)

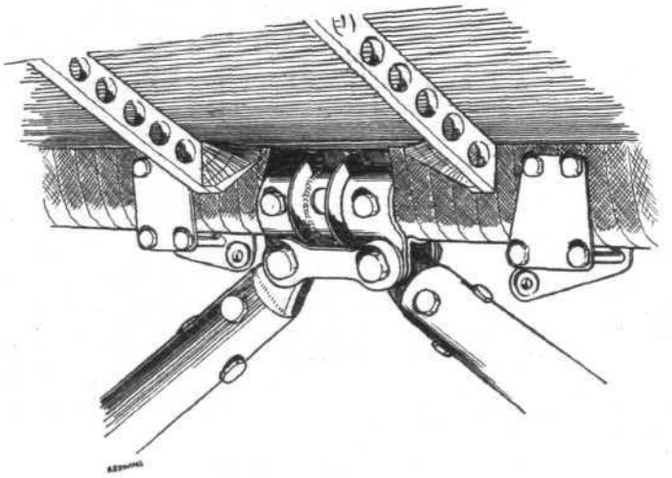
that the machine has a top speed of about 95-100 m.p.h. with the "Genet" engine, appears to indicate that the aerodynamic efficiency, although not quite as high as could be achieved in a carefully designed tandem-seated type, is certainly not so low as to make any practical difference to the utility of the machine.

The "Redwing II" is, in its general design, a small single-bay biplane of orthodox layout, with a "Genet" engine mounted in the nose of the fuselage, a "split" undercarriage, and the two seats placed side by side but slightly staggered. The absence of a petrol tank in the top centre-section improves the appearance and probably reduces the drag a little. As a type the machine is unremarkable, but in its constructional details there is much of interest, and many features which reveal the hand of an experienced designer, as one would naturally expect from a man who has been intimately connected with the design side of aircraft since the early days.

The fuselage of the "Redwing" is a flat-sided box with cambered deck. It is built up of a framework covered with plywood. The sides as well as the deck and floor have struts at right angles to the longerons, and diagonal struts across each bay. The side panels are staggered in relation to those of top and bottom so as to provide room on the longerons for the square three-ply "biscuits" used for attaching the struts to the longerons. One of our sketches shows the type of construction. An unusual feature is the omission of the three-ply covering from the bottom of the rear portion of the fuselage. Instead of the three-ply wood, fabric is used here, so that if at any time after prolonged use it should be desired to inspect the fuselage structure thoroughly, this is readily done by stripping off the fabric covering of the bottom. In shape the fuselage is of good streamline form, and in spite of the side-by-side seating, the width does not appear excessive.

In the forward portion of the fuselage the construction is slightly different, due chiefly to the use of tubular cross-members to take the loads of the lower wing spars. These cross-tubes are carried in bearings formed by sheet-steel plates bolted to the lower longerons, and to prevent the securing bolts from gradually working loose in the wood of the longerons, thick aluminium washers are recessed into the longerons to give large bearing area.

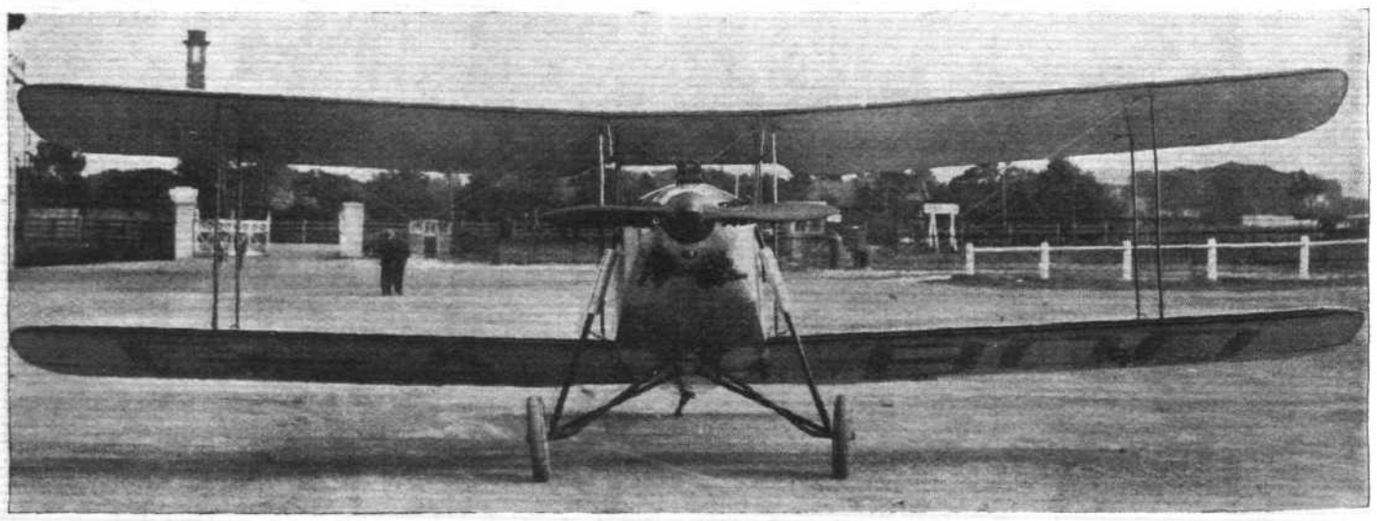
The two seats are placed side by side, but slightly staggered in relation to each other, the port seat being a little ahead of the starboard. Between the seats there is a triangular structural member formed by a vertical, a horizontal, and a diagonal strut member, the sides of all three being covered with plywood boards to form a triangular partition. The horizontal member of this partition joins front and rear spar cross-tubes, while the upper end of the vertical member is attached to a cross strut in the deck. The object of this triangular partition is to form a stiffening member for the centres of the cross-tubes. The special bracing of these is made necessary partly by the extra width of the fuselage and partly by the undercarriage design adopted, in which the bent axles and the radius rods are hinged to the centre of the fuselage floor. The manner in which the hinge for the



The bent axles of the undercarriage are hinged to the cross-tubes in the bottom of the fuselage. The brackets on each side of the hinge carry the engine control rods. (FLIGHT *Sketch.*)

bent axles is formed is shown in a sketch. The hinge for the radius rods is very similar. The horizontal components in axles and radius rods under load would produce bending in the cross-tubes, and this is taken care of by the triangular partition previously referred to.

The controls in the cockpit are of normal type, except that a somewhat unusual type of pedal movement is used for



THE ROBINSON "REDWING MARK II": The telescopic legs of the undercarriage run to the top longerons. (FLIGHT *Photo.*)

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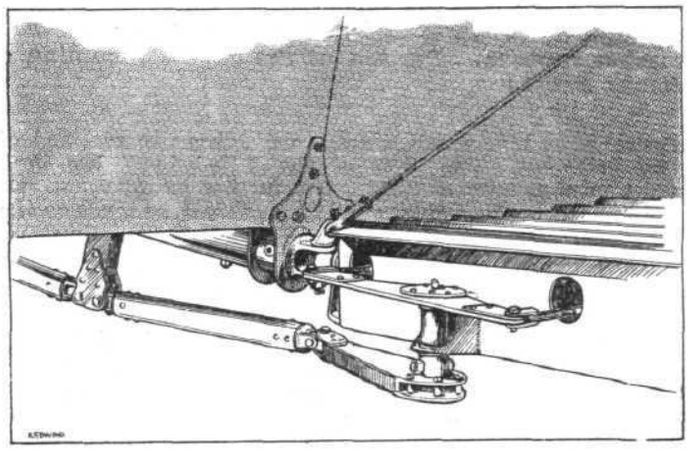
THE ROBINSON "REDWING MARK II": Three-quarter rear view. (FLIGHT *Photo.*)

the rudder control. With side-by-side seating there is not a great deal of width for foot bars of adequate length, and so Mr. Kenworthy has adopted pedal control, which gives parallel movement, and avoids the angularity that would result from using very short foot bars. The pedals are easily adjustable, so as to suit pilots of various heights, the type of pedal used being shown in a sketch.



The wing-folding device. T-cranks are mounted on the roots of the lower planes, with cables to the ailerons and links to the pilot's controls. (FLIGHT *Sketch*).

The Armstrong Siddeley "Genet" engine is mounted on a steel tube structure in the nose of the fuselage. Triangulation is obtained in the top bay by two tubes arranged in a Vee, and in the side by diagonal tubes. Over the main engine mounting structure is a light skeleton, which carries the engine cowling panels. The main petrol tank is mounted in the deck fairing just aft of the fireproof bulkhead. The tank in this position is placed high enough to give direct gravity feed to the engine, and its absence from the top centre-section results in a better appearance, as well as reduced drag.

The undercarriage of the "Redwing" is of the "split" type, with the bent axles and radius rods, as already mentioned, hinged to the centre-line of the bottom of the fuselage. The telescopic legs are taken to the top longerons. These legs incorporate oil dampers and compression rubbers There are no springs or valves, the main loads being taken partly by the oil and partly by the rubber buffers. The legs are double-acting, *i.e.*, the oil exerts a force restraining the legs, when these have reached the top of their travel, from dropping quickly, so that the machine has no tendency to bounce. The stroke of the telescopic legs is fairly long, so that the machine can be landed without damage on even quite rough ground, or by a pilot of no great skill.

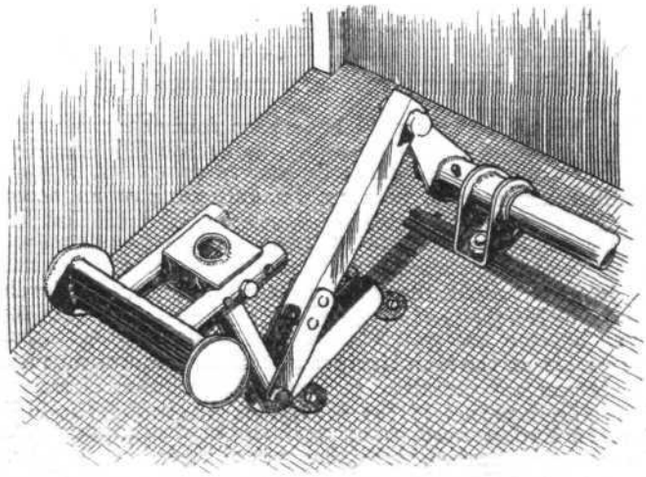
The tail skid is of Vee type, with the rear member telescopic and containing a coil spring. The skid is steerable, and padded bracket arms limit its travel. A quickly-detachable shoe of large area is fitted, which can easily be renewed when excessive wear has taken place.

The biplane wings of the "Redwing" are of orthodox construction with box spars having spruce flanges and three-ply webs. The wing ribs have spruce flanges and braces, joined together by small three-ply gussets, as indicated in a sketch. The interplane struts are streamline steel tubes, and the end fittings are particularly neat, the flat steel plates which joint them to the wing fittings being buried in the strut ends. The same flat steel plates also form the lugs for the incidence wires.

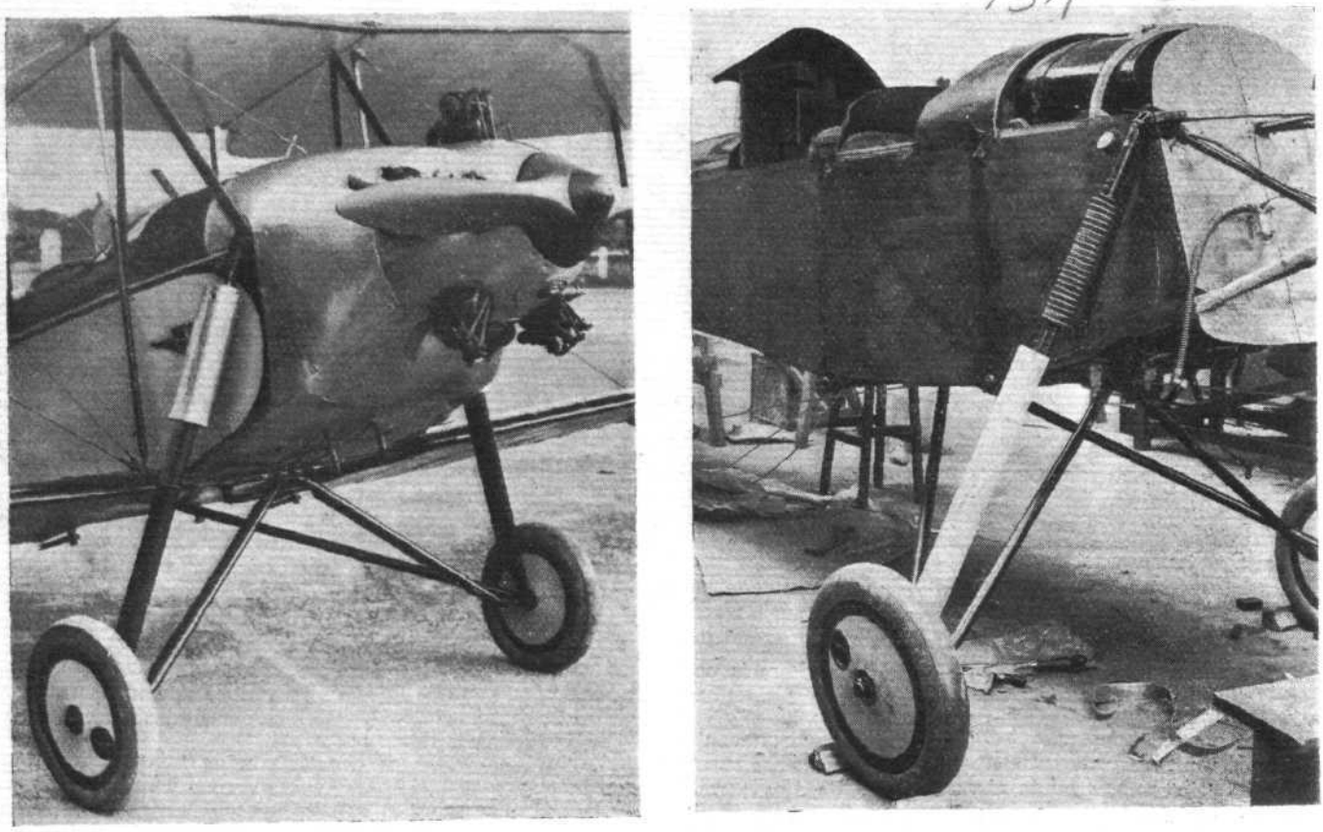
The wing-folding arrangement is unusual in that there is a special device which automatically centres the ailerons when the wings are folded. This device, which is shown in a sketch, consists of a T crank mounted on the lower wing root. From the ailerons cables pass to the ends of the crank. The other crank member is joined to a horizontal tube, which connects with the lower end of the pilot's control. The arrangement of the device will be obvious from the sketch. It should be pointed out that ailerons are fitted to the lower wing only. Cables are used in straight lengths only, and do not pass over pulleys.

The cockpit of the "Redwing" is, in spite of the fact that no space has been wasted, by no means cramped, and the view from both seats is quite good. A full range of instruments (Smith's) is fitted, including altimeter, air-speed indicator, revolution indicator, oil pressure gauge, oil thermometer, eight-day clock, Simm's petrol gauge, cross level and switches.

The "Redwing II" has an overall length of 22 ft. 3 in.

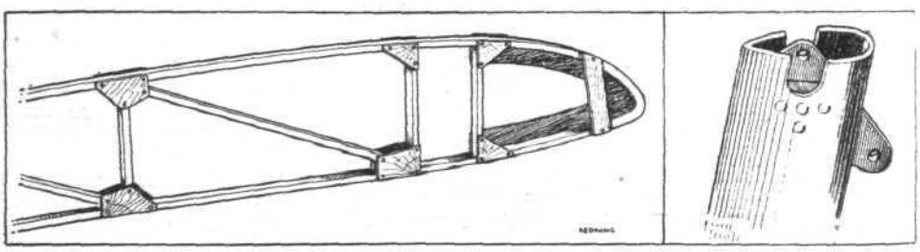


Pedals are used instead of foot bars for the rudder control. The pedals can be adjusted for length. (FLIGHT *Sketch.*)



THE ROBINSON "REDWING MARK II": On the left a view of the undercarriage and the neat cowling of the "Genet" engine. On the right a photograph, taken while the machine was in course of construction, showing the undercarriage, with compression rubbers. Portion of the engine mounting is also visible. (FLIGHT *Photos.*)

(6,780 m.), a wing span of 30 ft. 6 in. (9,3 m.), and a wing area of 250 sq. ft. (23,25 m²). With wings folded the overall width is reduced to 9 ft. 8 in. (2,95). The tare weight is 860 lb. (391 kg.), and the gross weight 1,450 lb. (650 kg.), so that the ratio of gross weight to tare weight is 1·686. The maximum speed is approximately 95 m.p.h. (153 km./h.), and the cruising speed 85 m.p.h. (137 km./h.). The landing speed is very low. The exact figure has not yet been ascertained, but it is probably not much more than 30 m.p.h. (The wing loading is very low: 5·7 lb./sq. ft.). The machine has been designed for easy and safe flying rather than for high performance, and the low landing speed, coupled with good controllability, should make it very suitable not only for instructional work, but also for the private owner who desires a machine which is easy to fly, cheap to run, and of low first cost. The price of the "Redwing" has been fixed provisionally at £575. For further information, and for demonstration flights, application should be made to the Robinson Aircraft Co., Ltd., Stafford Road, Croydon, Surrey.



On the left a sketch showing rib construction, and on the right the neat end of an interplane strut. (FLIGHT *Sketches.*)

IMPERIAL AIR ROUTES*

A YEAR ago it would have been fairly easy to write a book on the air routes of the British Empire, A year hence, it may again be easy to do so. A writer 12 months hence may, perhaps, be able to give an account of the route from Cairo to Capetown, and of that from Karachi to Rangoon. Maj. Salt wrote his book at a time when things were happening rapidly and more things were about to happen. Since the book went to the printers developments in the plans of Imperial Airways on the African route have become known. The selected route is given, almost accurately, in the map facing page 132, but the latest developments are not described in the text. Another change has been the cessation of the Australian Government's subsidy for the Larkin route from Adelaide to Cootamundra, Melbourne, and Broken Hill. And yet another is the extension of the Australian National Airways service from Sydney to Melbourne. Consequently, the book was partially out of date before it was published.

This book gives evidence of great pains spent on collecting material, and the author in his preface says that the task has given him much pleasure. Still, certain internal evidence suggests that he has not been a consistent student of aeronautics. He has tried to obviate mistakes by submitting part of his proof to recognised authorities. It was a pity that the whole proof was not so treated, for a number of minor inaccuracies has crept in. For example, Hinkler has not flown to the Cape or back (page 130). On page 139 it is stated that Alcock used "two Rolls-Royce Eagle engines of 250-h.p. each," and on page 52 that Ross-Smith used a similar Vimy "but fitted, for this occasion, with two 360-h.p. Rolls-Royce Eagle viii engines." In both flights the engines were of the 360-h.p. Eagle viii type. On page 5 it is stated that Orville Wright flew for 12 seconds on December 17, 1903, and that Wilbur Wright flew 59 seconds the next day. Actually, both flights took place the same day. These are not vitally important points, but they show the pitfalls which authors have to avoid. In the main the book is accurate, thought the arrangement of the matter is not ideal. It is probable that a second edition corrected and brought up to date a year or more hence will be a more valuable addition to an aeronautical library.

* *Imperial Air Routes.*—By Major A. E. W. Salt, with an introduction by Sir Sefton Brancker. (John Murray.) Obtained from FLIGHT Offices. Price 6s. net.

PRIVATE FLYING AND CLUB NEWS

LIGHT AEROPLANE Clubs in New Zealand.—The New Zealand Government has with admirable foresight seen fit to foster the light aeroplane club movement in order that they may have a more or less continuous supply of pilots trained under government supervision from which may be drawn personnel for service training when required.

The subsidy which they have granted to a limited number of clubs is awarded in the form of a loan of two D.H. Moths and the payment of £25 for each member who qualifies for his "A" licence; such members being restricted to males under 35 years of age who have qualified *ab initio*. The grant under this heading is, however, limited to £500 per club for each financial year.

The club after having been approved must be duly incorporated and be in a position to provide for the repair and maintenance of the aircraft. In addition, it must have a qualified pilot instructor and ground engineer and at least 30 members who are prepared to qualify as pilots. Since the inception of the scheme in May, 1929, seven clubs have been approved and approximately 100 pilots have been trained. A further two clubs, namely Otago (Dunedin) and Southland (Invercargill) will also shortly be approved. The movement in general is evidently gaining a great deal of enthusiasm and though we understand that the climate is very much like ours here, and the lack of suitable ground even more pronounced, we are very glad to see so many clubs established on a firm basis. Below we give a list of the clubs, together with the aerodromes on which they operate.

AUCKLAND AERO CLUB. Hon. Sec.: P.O. Box 168, Auckland.	Hon. Aerodrome, Mangere, Auckland.
HAWKE'S BAY & EAST COAST AERO CLUB, consisting of the following Aero Clubs: **Hawke's Bay, Gisborne & Dannevirke Aero Clubs.** Hon. Sec.: P.O. Box 287, Auckland.	Aerodrome, Hastings. Municipal Aerodrome at Dannevirke.
WESTERN FEDERATED (N.I.) AERO CLUB, consisting of the following Clubs: **New Plymouth, Hawera & Wanganui Clubs, Feilding & Palmerston North.** Hon. Sec.: P.O. Box 268, New Plymouth.	Aerodromes, Hawera and New Plymouth. Municipal Aerodrome under construction at Wanganui.
WAIRARAPA AERO CLUB. Hon. Sec.: P.O. Box 182, Masterton	Hon. Aerodrome, Martinborough and Masterton.
WELLINGTON AERO CLUB. Hon. Sec.: A. M. P. Buildings, Customhouse Quay, Wellington.	Municipal Aerodrome, Rongotai, Wellington.
MARLBOROUGH AERO CLUB. Hon. Sec.: P.O. Box 73, Blenheim	Aerodrome, Blenheim.
CANTERBURY AERO CLUB, to which **Mid-Canterbury Aero Club** is affiliated. Hon. Sec.: P. O. Box 318, Christchurch	Uses Military Aerodrome, Sockburn, Christchurch. Municipal Aerodrome, Ashburton. (Mid-Canterbury).
OTAGO AERO CLUB. Hon. Sec.: P.O. Box 727, Dunedin.	Aerodrome under construction 1½ miles north of Mosgiel.
AERO CLUB, SOUTHLAND. Hon. Sec.: P.O. Box 250, Invercargill	Aerodrome under construction 1½ miles west of Invercargill.

CINQUE PORTS Flying Club: Fog more or less stopped flying the whole week, ending December 6, so that the total flying time for the week was only 5 hr. 35 min. An interesting visitor during this week was a new German machine, The Espenlaub. This is a two-seater high wing monoplane with a Cirrus III engine. Mr. W. J. Farquharson, a South African who has recently joined the club, was flying it and was accompanied by the designer of the machine. Mr. Farquharson is a member of the Johannesburg Light Aeroplane Club, and has joined the Cinque Ports Club during his stay in England. An unfortunate sequel to this visit occurred on Monday, December 8, when Mr. Farquharson took off The Espenlaub in very gusty weather and apparently stalled in a climbing turn, with the result that both his face and the machine were somewhat flattened on the aerodrome fence.

A short history of this club will be interesting, inasmuch as it has experienced a very successful career up to date. Messrs. R. Dallas Brett and H. E. Thwaites began the first work leading to the club's formation in the summer of 1927, and in February, 1928, a company was floated and incorporated with a nominal capital of £2,000 in £1 shares. On Easter Sunday of that year a very successful flying meeting was held at Lympne, which attracted about 30 aircraft and some 6,000 spectators. Following this, a Moth (Cirrus II) was purchased, and club flying commenced on May 12, 1928. Capt. Neville Stack at first acted as voluntary instructor, and he was succeeded by Capt. G. F. Lines. Mr. R. H. Wynne was appointed first ground engineer, and a little later Maj. I. N. C. Clarke took over the instruction, which led to the first three members obtaining their "A" licences on July 1. At that time there were 22 flying members. The club continued to grow, and even had several successes in competitions. Many more members now wished to learn to fly, and on September 22 a second Moth was purchased. At the beginning of October, Maj. Clarke resigned and Maj. H. G. Travers took over the duties of pilot instructor. At Christmas of the same year the club room and bar in the eastern side of the club hangar were opened. In 1929 the club organised one of the first really international club meetings held in this country, at Easter. This was attended by English, German, Dutch and American aircraft, and over 50 machines arrived. At the end of the first year's working the club's aircraft had flown 432 hr., and 15 members had qualified for their "A" licences, while the number of flying members had increased from 22 to 62. The second year then began, and Maj. Travers resigned to go to the London Club, and Mr. K. K. Brown took over from him. The club still continued to grow, and the flying membership became over 100 during July. A record was established on September 28, when the club's two machines flew for over 50 hr. In October the club room was further extended to accommodate the growing number of members. At the end of this second year the club aircraft had flown 896 hr., or more than twice as much as the first year's figure, and 24 members had qualified for their "A" licences. The third year then started, and on May 23 the club took delivery of another Moth (Cirrus II). During the first six months of this year many competitions have been won by club members on club aircraft, and the amount of flying has shown a very great increase, as the three aircraft have put in no less than 868 hr., while during this period 24 members have qualified for their "A" licences. By the end of this time the club's assets have increased from the £1,000 in cash held at the formation, to an equipment of three aircraft, a spare engine, workshop, tools, club room and bar, furniture and stock, and a reserve fund of about £1,300. This result must be looked upon as a very gratifying one, and we hope that similar progress will be made for many years to come.

Hanworth Club now provides an alternative to flying, so that their members may use the aerodrome in spite of the fog! (FLIGHT *Photo.*).

THE BRISTOL " BULLPUP " : Three-quarter front view.

THE BRISTOL "BULLPUP"

An Interceptor Fighter with Bristol "Mercury" Engine

DESIGNED to intercept an enemy raider as soon as possible after receipt of news that the raider is approaching a certain locality or area, two essential qualifications form the basis of the design of an aeroplane of this class: The greatest possible rate of climb, in order that the interceptor may reach the altitude of the raider in the shortest possible time, and high speed at the operational height of the raider, so that the interceptor may overtake the raiding aircraft without loss of time. In order to achieve these two essential qualities, the aircraft designed for interception of raiders must of necessity sacrifice certain other qualities. For example, the interceptor is assumed to be stationed at no very great distance from the route along which the raider is approaching, and, consequently it is permissible to reduce the range of the interceptor, or, in other words, to save weight by carrying a minimum of fuel. Also, as weight must be reduced in order to achieve the necessary climb, all items of equipment which it is at all possible to do without are omitted in this class of aircraft. For example, wireless adds a good many pounds of weight, and as the interceptor's duty is solely to find and attack the raider, and not to communicate his whereabouts to the ground or to other aircraft, interceptor fighters do not carry wireless. Briefly, the equipment of an interceptor fighter is reduced to the two bare necessities: Guns and oxygen apparatus (the class being intended to operate at great heights). This, at any rate, is the theory on which we are working at present, although it does not follow that the policy may not in time have to be changed.

The Bristol " Bullpup " is an interceptor fighter, generally similar in design and construction to the Bristol Company's well-known " Bulldog " ordinary fighter, but differing from the older machine in certain details, and carrying as equipment, guns, ammunition and oxygen apparatus only. The " Bullpup " carries two Vickers 0·303 guns, one on each side of the fuselage. The machine is of all-metal construction, with exception of the covering, which is fabric except for the forward portion of the fuselage. The pilot is situated behind the trailing edge of the top centre-section, which is cut away for view. The pilot's sight line is approximately parallel with, and some six inches below, the chord line of the top plane. The " Bullpup " has an overall length of 23 ft. 2 in. (7 m. 060), a wing span of 30 ft. (9 m. 150), and a height of 10 ft. (3 m. 050). A Very pistol is carried, with stowage space for cartridges. If desired, mountings can be supplied for extra guns on the lower wings. These guns are operated by remote controls.

The Bristol Company has instituted a form of specification, couched in telegraphic terms, and with the items arranged in alphabetical order, which appears to describe the machine in the smallest possible space, and we have thought this style of description rather neat, and are retaining it in the following notes :—

Ailerons.—One pair on top wings only. Frise balance. Main spar and trailing edge in steel tube. Remainder in steel strip.

Aldis Ring and Bead Sights.—Mounted on a rigid tubular structure attached to the top of fuselage.

Belt Box.—Contains a total of 1,200 rounds. Easily filled and detachable. Constructed in duralumin with detachable necks and hinged doors for filling.

Rudder Bar.—Adjustable in flight through 4-in. horizontal movement. Adjustment does not necessitate altering length of control cables.

Elevator and Aileron Controls.—Operated by control column connected to a rockshaft on which a sprocket is mounted for operating the ailerons. The sprocket is connected by a chain to a secondary sprocket driving a lever. Thence by cables to pulleys near lower wing tip, then up to ailerons which are on top wing. Tecalemit lubricators fitted.

Centre Planes.—Steel tube spars and trailing edge. Duralumin sheet leading edge, and steel strip remainder. Top centre plane wire braced inside. Bottom centre plane strut braced to withstand undercarriage stresses.

C.C. Firing Gear.—Standard Air Ministry installation fitted.

Instrument Board.—Made in metal. A.S.I. altimeter and running switch fitted on port half. R.P.M., oil-pressure gauge, watch, doper and starting switch fitted on starboard side. Compass card holder, compass and cross level in centre.

External Bracing.—$\frac{3}{8}$-in. single R.A.E. lift wires, $\frac{1}{4}$-in. single R.A.E. ground wires (in each truss).

Single pair of N interplane struts.

Electrical Installation.—Generator, Mk. III.A. 500 watts at 12 volts (40 amps) fitted. Voltage control fitted (No. 2 Mk. III.A.). Generator field shunt fitted. Switchbox No. VII.A. fitted.

Fuselage Fore End.—High-tensile steel tube construction. Plate fittings at joints. No wire bracing in side elevation (tubes only).

Fuselage Rear End.—High-tensile strip steel construction. No wiring in sides, top or bottom plans. High-tensile steel tube stern frame braced in elevation with steel tube. Similar to fuselage front end in being exceptionally rigid.

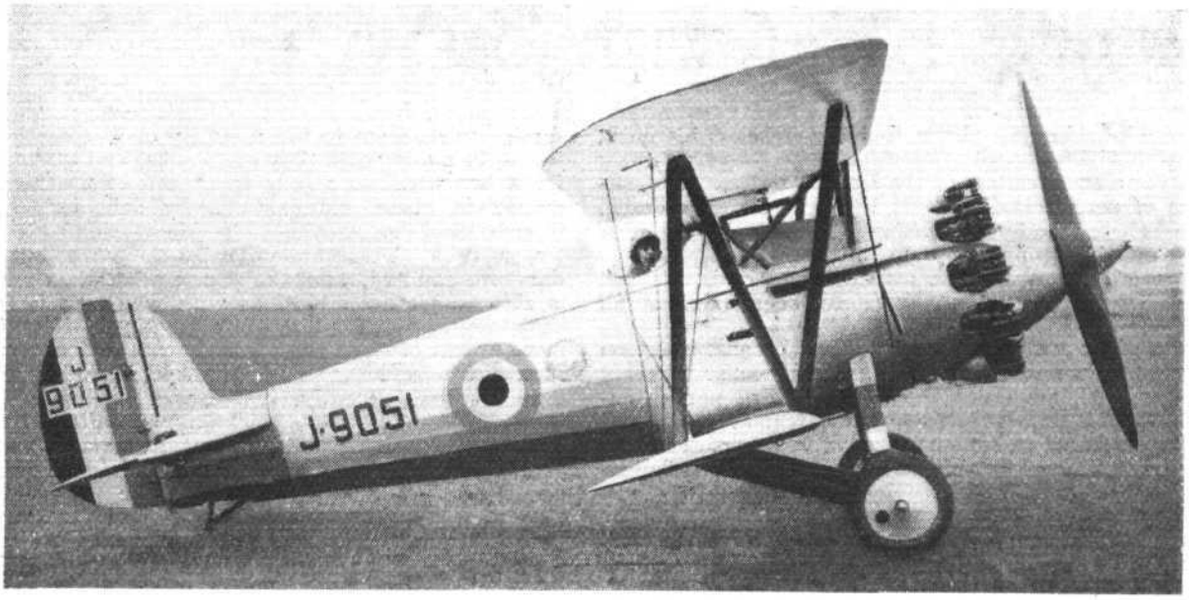
Fin.—High-tensile steel tube framework with channel section duralumin ribs. Aluminium leading edge. Upper part forms a shield for balance of rudder.

Fireproof Bulkhead.—$\frac{1}{8}$-in. asbestos with 26 SWG aluminium front and back.

Gun Mountings.—Steel box girder mounting Adjustment up and down, and sideways provided. Gun readily detachable from mounting.

Gas Starter System.—Installation provided for R.A.E. trolley gas starter, *i.e.*, to plug in to side of fuselage, with distribution cock, master switch, &c., in the cockpit.

Wing Gun Mountings are optional. These are for mounting one (or more) pair of Lewis guns on the underside of



THE BRISTOL "BULLPUP": This side view shows the clean lines of the machine, and the neat cowling over the Bristol "Mercury" engine.

bottom wings. Control—remote. Mountings adjustable to train the guns which are additional to Vickers.

Oleo Legs.—Oil and compression rubbers system. Rise about 4 in. on oil, and leaves about 1⅛ in. for taxying on the rubbers. System same as Bulldog. Impossible to over fill with oil. Casing containing rubber is inside the fuselage fairing—giving minimum air resistance.

Oxygen System.—High-pressure type; 750-litre oxygen bottle. Mk. V, mounted in fuselage bay behind pilot's cockpit. Feeds to flowmeter Mk. 1.A, then on to delivery regulator, Mk. VII; thence to bayonet union Mk. II; thence to Mask Mk. II by flexible pipe.

Pilot's Seat.—Adjustable in flight. To suit seat type parachute. Adjustment 4 in. up and down by wheel screwing legs out of sockets.

Petrol Tanks.—One of 31 gallons in each top wing, 62 gallons in all. Filter and sight gauge fitted to each. Similar in type to Bulldog.

Petrol Gauge in Wing Tanks.—Similar to Bulldog, *i.e.*, float, twisted spindle, magnetic coupling to coloured indicator visible through cellon window in base.

Petrol and Oil Systems.—Petrol system by gravity from wing tanks. No pumps, flowmeter, etc. Two control cocks only, one for each tank. Oil system standard, *i.e.*, delivery by gravity from tank, return via oil cooler with safety valve to open when pressure rises beyond safety.

Tail Skid.—Telescopic compression rubber unit with swivelling shoe and radius rods to underside of fuselage. Tecalemit lubricators fitted.

Tail Actuating Gear.—Wheel in cockpit with tail setting indicator coupled to it. Screw jack at rear end, moving rear spar of tail vertically. Similar to Bulldog at rear end.

Undercarriage.—Similar to Bulldog, but is fitted with 650 × 125 Palmer wheels. Trulay cable bracing. Tecalemit lubricators fitted. Provision for undercarriage jack between axle and fuselage to enable a leg to be removed or for keeping machine rigid when rigging.

Very Pistol, and stowage for six cartridges fitted.

Engine Mounting.—Solid forged steel ring engine mounting carried on and braced by high tensile steel tubes. Exceptional rigidity claimed.

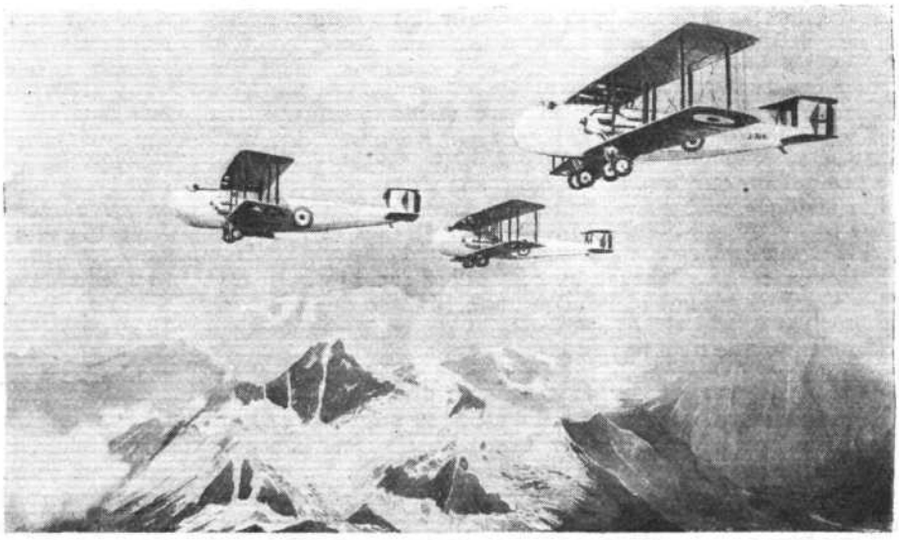
Exhaust Ring.—Special ring forming part of cowling of N.A.C.A. type. Situated behind the cylinders.

Engine Cowling of N.A.C.A. type, completely enclosing engine. Formed of beaten aluminium panels between exhaust ring and back of propeller. Aluminium panels, detachable where necessary between exhaust ring and rear of pilot's cockpit, similar to Bulldog.

Oil Tank.—Gravity fed. Capacity 6 gallons. Incorporates special system to enable the oil to be warmed up rapidly for a quick departure without employing electrical heating of the oil. Tank mounted on top longeron, under fairing.

Oil Cooler.—New type of Bristol design, formed of 19 thin elliptical section tubes with short-circuiting pipe fitted with safety valves to prevent pressure bursting cooler when oil is thick.

Elevator.—Steel tube and strip construction, like tail plane.



EVACUATION OF INHABITANTS OF KABUL: This picture is a reproduction of a painting by Mr. Johns, representing Vickers "Victoria" Troop Carriers with Napier engines flying over the Kabul-Peshawar area. A reproduction in colour of this painting has been issued jointly by Vickers (Aviation), Ltd., and D. Napier & Son. Ltd., and we are asked to state that on application to Vickers from any of the officers and personnel of the R.A.F., &c., who took part in the Kabul operations, a copy of the reproduction will be sent, post free.

"I WILL OBEY"

IT is a much-hackneyed phrase, but nevertheless a truism, to say that the growth of aviation depends very largely upon the airmindedness of the British public. A desirable form of aero-mentality must therefore be engendered, not only in those who fly or want to fly, but also in all those who stay on the ground and do not want to fly. Even indifference is an unfavourable attitude, and both this and open hostility to flying must, therefore, be avoided at all costs.

Any form of air accident causes hostility, because a section of the Press makes a fuss about it, and also because property may be damaged, and even the lives of third parties endangered. When such accidents occur, regular flyers and would-be flyers begin to have qualms, while others definitely become enraged. Apart from actual accidents, airmindedness will increasingly be affected by another cause not yet sufficiently discussed. Any congestion of aircraft on or around aerodromes, or on air routes, becomes dangerous; and if accidents result, as they sometimes do, laws will be passed that must of necessity make air travel less convenient than now, in the hope of making it safer. Much of the fun will then have gone out of flying. If these laws are to be reasonable and not oppressive, the behaviour of pilots will first have to be considered.

I should like to take this occasion, which I hope is a timely one, to appeal to pilots, while there is still a chance of an appeal being useful; and furthermore, I would ask those whose opinions carry weight to back me up, by making what propaganda they can on these lines. It is not a brave thing to fly, and the better the pilot the less brave he is; in fact, the best pilot might almost be called a "coward," since he is wise enough not to take chances which may prevent him from living to "fly another day."

The following recent happenings will illustrate my meaning. An old pilot (that is, old in experience), who has flown long enough to have learnt to be a good "coward," was flying in company with a new "brave," comparatively inexperienced pilot from their home aerodrome to London. The weather was in the nature of a test case, and the old pilot in his wisdom turned back, but the young pilot in his pride kept on and, it is true, he arrived. Perhaps he felt that he could not afford to turn back because he was such a very young pilot. It was good news, of course, that he got through, but it would have been very, very bad news if he had crashed, in which case he might have been killed or damaged; and whatever discouragement he might have experienced from this would matter very little when compared with the regrettable reaction his crash would have had on others who would have been discouraged by him.

Within a few days of this occurrence, a pilot who had already inspired many with confidence, took off in a fog. His death was a warning which should not have been necessary, and I maintain, very emphatically, that if a proper spirit of respect for the air, with all its fickleness had predominated, many of the flying men and women amongst us would not have had to regret this loss of a pleasant friend. Furthermore, we shall continue to lose others until we are wise enough to develop a conscience that will make wise "cowards" of us all.

We, in this country, have a more or less constant ready-made setting for tragedies, since from the flying point of view, we have the worst weather in Europe. While this may eventually make us a nation of airmen, as we have become a nation of seamen, it is reasonable to suppose that it will only do so at the cost of many disasters. Not until seven people had died every day, for two years, did we see fit to modify our laws of the road, and if this is a sample of our methods in England, flying will have a set-back, for it is not so firmly established as a necessary means of transport as is motoring.

However, if, as I hope, my convictions come to be shared by a growing number of pilots, and if those pilots act on them, we should then be able to do better in the air than the men on the road have done.

Rules we already have and every pilot who takes his "A" licence must learn them, but as he is to be examined in them the usual examination complex sets in, so that he "crams" for them, passes, and quickly forgets them. This is a pity, but only natural, since the rules he has to learn are international ones, wherein I think lies the mistake. In England we are far too insular to be internationally-minded, and those regulations dealing with black balls and shapes in foreign parts seem to the majority of us too remote. Then again, in many ways they are a joke, and of course, respect for a law which is a joke is absurd. Something might be gained in these examinations by substituting for those international rules the Air Navigation (Consolidation) Order, 1923. These are virtually the same, but applied to our own country, and the young pilot when reading them is able to picture situations with which he is familiar, so that they appear for him quite practical. Now, if only the more urgent of these rules were known and observed to-day such events as follow would be less likely to happen.

It occurred, recently, that I was coming in to land at a London aerodrome one thick day, and after I had punctiliously made a left-handed circuit and was about to land, another aircraft that had made a right-handed circuit passed underneath me and perched upon the particular piece of aerodrome that I had already selected for my own use. Being a "coward," though by no means an experienced one, I went round again, and once more the same thing happened. Then, to round off things nicely, while I was making my third circuit, a Service aircraft roared down out of the mist, straight across the middle of the aerodrome, passed within a few yards of my propellor, and continued its way through other aircraft which were flying at the time.

An experience which will still further illustrate my meaning occurred at Croydon not so long ago. On this occasion the wind was very light and was coming from behind the Control Tower. I landed, leaving the Tower on my left, and just as I was doing so, another machine which had not made a circuit, but had approached the aerodrome at a low altitude, came in somewhat across wind leaving the Tower on its right, with the result that he landed right across me, which, had the aerodrome been small, would have necessitated my going round again. Had he made a circuit before slinking in over the hangar roofs, we should have seen each other and each been able to land without incommoding the other. The practice of approaching an aerodrome low and coming straight in cannot be too strongly deprecated, even when the pilot of the machine is entirely at home at the aerodrome.

It seems to be just that familiarity with the home aerodrome that breeds a contempt for the regulations, which may prove disastrous one day sooner or later; after all, the regulations imposed with regard to such matters are not, even at an aerodrome like Croydon, a very great number, and there is no real excuse for disregarding them, so that the coming generation of pilots must be brought up to realise that with them rests the whole issue as to whether we shall be allowed to continue with the few comparatively simple regulations we now have, or whether we shall be encumbered with a greatly increased mass of restrictions which will make our lives burdens.

I do not quote these as particularly unusual occurrences, but merely as examples of what far too often happens, and while such things do happen it is too much to expect that we shall continue to enjoy good luck for long.

Let us therefore conserve our luck for the times which are bound to lie ahead, when after all our best efforts, we still may need it.

Gentlemen of the aircraft trade and those who have control of aerodromes I adjure you, beware of pickpockets! At present it suits your pockets to persuade your clients that there is nothing in flying: it is safe, it is easy, and you only want £100 down. Well, I grant you, it is easy, and it is safe, but you only want a few aircraft down in splinters, and your aerodrome licence may be suspended, while even failing that, heaps of firewood, old iron and crumpled fabric round the aerodrome are not reassuring evidence in support of your slogans.

At the risk of being disbelieved, I will quote this one more personal experience. First, however, let me recall to your mind sub-section (*c*) and (*d*), paragraph 31 of section 3, Schedule IV of the Air Navigation (Consolidation) Order, 1923. (*c*) "Every aircraft which, in the vicinity of a route frequented by aircraft, is following a line of land marks such as a road, railway, river, canal or coastline, etc., shall keep such line or land mark at least 300 yards on its left." (*d*) "An aircraft shall not fly keeping any of the lines or routes above referred to on its right, except at a distance therefrom sufficient to avoid aircraft following such lines or routes in accordance with these rules."

I should have thought that this was clear enough, yet on a flight in thick weather of the type that made a

"Bradshaw" preferable, I passed three aircraft flying down the same bit of railway, all of them keeping it close on their right.

Do not misunderstand me; I am not advocating wholesale legislation and Orders in Council of the type that make cads of us all, so do let us maintain a sense of proportion and order such things ourselves, lest we force the hands of our masters.

In conclusion, I think that institution at Stag Lane, The Rumble Club as it is called, should be developed.

This development would be national in character and would therefore have a wider scope than the existing one. Why not call it the British Rumble Club, and base its rules on the Rules of the Air, with heavy penalties against offenders, under the following headings :—

Recklessness—not bothering to listen to what the chief pilot says to you or calls you.

Unmuzzlement—being guilty of an action through which the sensational press thinks fit to talk about flying in a manner detrimental to it.

Moisture—being guilty of foolish behaviour liable to cause a breach of the peace or of an aircraft.

Bravery—flying in an ostentatious manner so as to appear daring.

Luckiness—being guilty of supposing a tendency on the part of chance to bring about a succession of favourable events.

Envenomy—being guilty by word or action of infusing venom into the public mind to the detriment of flying.

"DAEDALUS."

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ANNUAL "D.H." DINNER

THE De Havilland Aircraft Co., Ltd., held their annual Works Dinner, at the Portman Rooms, Baker Street, on Friday of last week. As usual, the affair was a most enjoyable one, and numerous speeches were made, of which, however, we have space to record but briefly some of the remarks made by Mr. Alan S. Butler, the Chairman of the Company.

Mr. Butler related how he nearly missed being at the dinner, owing to the fact that the boat on which he was travelling across from Canada had engine trouble in mid-Atlantic. While this engine failure did not cause any anxiety from the point of view of safety, it had worried him a good deal, because he was afraid it might prevent him from being present at the dinner. Mr. Butler said that while he had been away travelling around Canada and the United States, it had been almost like home, finding that Moths were nearly as plentiful on the American continent as at home, while the Puss Moth had already made its appearance in Canada and was earning high praise from all those who were operating it.

The past year, Mr. Butler said, had been one of the most difficult, and yet momentous in the history of the Company. On the one hand, they had got into production the Puss Moth and the Gipsy II and Gipsy III engines. These three productions he considered the finest the Company had yet achieved. On the other hand, the present condition of world trade and industrial depression had made it a difficult task to sell aircraft throughout the world during the past year. Mr. Butler recalled that when he spoke at the Works dinner last year he expressed the opinion that the Puss Moth, which he had then just flown, had beyond a doubt a wonderful future, and that to fly the machine gave one an entirely new feeling and outlook on flying. Now that the machine had got into the hands of users throughout the world, everyone held the same opinions as he did last year. He thought the success which had attended the type reflected the highest credit, not only on Captain de Havilland as designer of the machine and Major Halford as designer of the engine, but on every member of the Company.

Mr. Butler then read a list of the successes achieved by De Havilland products, which included many famous flights, but as these flights have all been recorded in FLIGHT from time to time, we refrain from repeating them here.

Turning to the expansion of the De Havilland Company, Mr. Butler recalled that the increase in flying activities at Stag Lane made it necessary to find more air and ground space, and that they had now installed their flying school at the new aerodrome at Hatfield.

Overseas he was pleased to record the forging of another link in the De Havilland Empire chain, in the form of the new De Havilland Company formed in South Africa. South Africa was one of the most important parts of the Empire, and he was sure that the step taken in establishing a company in Johannesburg would lead to a much increased use of D.H. products in South Africa.

In spite of the general trade depression throughout the world, the effects of which had been shared by the Australian De Havilland Company, the various associated companies had kept up their spirits, and were full of optimism for the future, as indicated by some expressions of goodwill received from them. Mr. Butler here read cables from the various De Havilland concerns overseas.

Mr. Butler recalled that he had always argued that the Empire chain of the De Havilland products should be considered the most important outlet for the Company. The time had come, however, when the rest of the world had got to be tackled seriously, and it was as a result of this realisation that the Company had taken the most important step in sending a representative to study the markets of the South American countries. The expansion of trade with the Southern Hemisphere was a matter in which they were vitally interested, as it would enable them to level out the depression which climatic conditions imposed during the winter months at home.

Turning to more intimate matters at home, Mr. Butler referred to the De Havilland superannuation fund, and said he was glad to note that the number of members had increased, while the amount contributed by members had shown a very satisfactory increase, standing at £2,539, as against £2,228 last year. The fund, invested in British gilt-edged securities, stood at the figure of £8,410, as against £6,600 last year. Their reserve fund and cash in hand were over double last year's figures, and he thought this represented a very satisfactory state of affairs in a scheme such as that, which was built up for the protection of the workers when they were sick, and to help them in the later years of their lives.

Although the horizon looked clouded by the general depression, Mr. Butler said he thought they had every reason to look forward with confidence to ever-increasing prosperity, and he would like to express his pleasure at the whole-hearted support which every member of the staff and works had given to the Management in the difficult task of the past year.

"In conclusion," Mr. Butler said, "I should like to say that I believe that strikes and labour troubles are born in the imagination of the Devil and politics, and fostered and brought up by unsuccessful companies in which there is a lack of understanding between the Management and their employees. It is definite proof, beyond all shadow of doubt, of the good feeling and co-operation which is the very breath and life of this Company, that we are entirely free from troubles of this nature. Times are hard just now, harder than they have ever been in my lifetime, but if you men and women continue to put the best that you have of your work into this Company, we shall emerge from this slump unscathed and with a future ahead of us which we will all be proud of."

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Change of Address

WILL readers please note that Alexander Duckham and Co., Ltd., are moving into new offices, and on and after December 27 their address and telephone number will be as follows :—*Duckham House, 16, Cannon Street, London, E.C.4. Telephone : Central 6246-9.*

Greetings!

WE have been asked by Messrs. Burch's, the R.A.F. Tailors, of 33, Bedford Street, Strand, W.C., to convey to officers of all ranks in the Royal Air Force their most sincere thanks for the generous support and kind recommendations that have been accorded them during the past year, and they tender their Heartiest Good Wishes for a Bright and Happy Christmas and Prosperous New Year, with the best of Good Luck.

Northfield, Birmingham, Landing Ground Closed

AN Air Ministry Notice to Airmen states that the Northfield Birmingham landing ground (details of which are given on pages 81-82 of the Air Pilot, Vol. I) is permanently unsafe for use by aircraft. Landings should, therefore, no longer be effected at this ground.

GLIDING

THE KENT Gliding Club had a successful week-end's flying on Sunday, December 7. The machine they were using was a B.A.C.1, and members were very pleased to be able to put the machine away fully rigged at the end of the meeting in their new hangar. This will save a very great deal of time, and flying will be started earlier, and finished later each Sunday, on this account.

DUNDEE AERO and Gliding Club.—Mr. B. F. Tongue, of 36, East Haddon Road, has been elected Secretary of this newly formed club, which will for the present concentrate on gliding and start operations early next year.

THE BRADFORD Gliding Club.—On Thursday, December 4, the club held a very successful dance. Among those present were the Lady Mayoress of Bradford and the deputy-Lord Mayor. Although the weather conditions were very unfavourable, gliding took place on Sunday, December 7, and several good glides were made on their machine, which has now completed 290 flights without damage. Competitions are being held at Scarborough on Boxing Day, and it is hoped that the Northern clubs will take part.

THE BRITISH Gliding Association has issued the following notes for the use of motor power in conjunction with gliders and sailplanes :—

The practice of driving gliders through the air by means of motors not directly fitted to the machines is beginning to show itself in this country. This has been given full consideration by the Technical Committee of the British Gliding Association, and the following recommendations are issued for the guidance of clubs.

The methods employed are :—

(*a*) Auto-launching ;
(*b*) Auto-towing, and
(*c*) Aeroplane towing.

Auto-launching.—The glider is launched either by the usual shock-cord method with one or two motor cars in place of the crew, or by a rope running forward from the glider and passing round a pulley to a car behind or to one side of the glider. The car may move along the ground or have one wheel jacked up and fitted with a winding drum.

This method should only be put into operation when an insufficient crew is available, and should for preference be used for experienced pilots only. The driver of the car and his assistant should both be qualified pilots.

Great care should be taken to see that the elastic is not unduly stretched, as a fracture will almost certainly spell danger for pilot, driver, and machine.

Auto-towing.—(These remarks apply also to towing by motor boat, as the conditions are similar.)

Auto-towing means flights of considerable duration in which the glider remains connected to the car for most, or a large part, of the flight. It enables long flights to be made over flat ground, and this allows the pilot more time to get used to the controls.

The glider does not leave the ground for the first few flights, after which the speed is slightly increased and a height of about 4 ft. is maintained until the pupil has thoroughly mastered the controls. Height may then be steadily increased to 200 or 300 ft.

For this method flights should only be made into wind and turns across or down wind should be rigorously avoided. The reason for this is easily explained as follows :—A glider being towed by a car moving at about 20 m.p.h. into a wind of about 10 m.p.h. gains a flying speed of about 30 m.p.h., but a turn down wind decreases flying speed to 20 minus 10, or 10 m.p.h. The inevitable result is a bad stall and crash.

Tow ropes should be long to give the pilot time to correct " bumps " or errors ; 300 to 400 ft. is suggested, with a minimum of 200 ft.

The flying speed of the glider should be kept to between 25 and 30 m.p.h. This means that the car should be, say, 30 m.p.h. less the velocity of the wind, which latter must be carefully ascertained before starting.

Any change in the wind speed should be carefully noticed and the car speed duly changed.

An instructor should stand by the driver to give orders, and both should be experienced pilots.

This method is better suited to the gliding school than the club, and is not recommended by the British Gliding Association unless superintended by fully qualified instructors and operated with the utmost care.

In any case, a quick release, with no possibility of failure, should be incorporated in the launching hook, so that the pilot may slip the tow-line at any desirable moment.

Aeroplane Towing.—Towing gliders behind aeroplanes has been done in Germany for research purposes and in America. Owing to the number of casualties, it has now been condemned in the latter country.

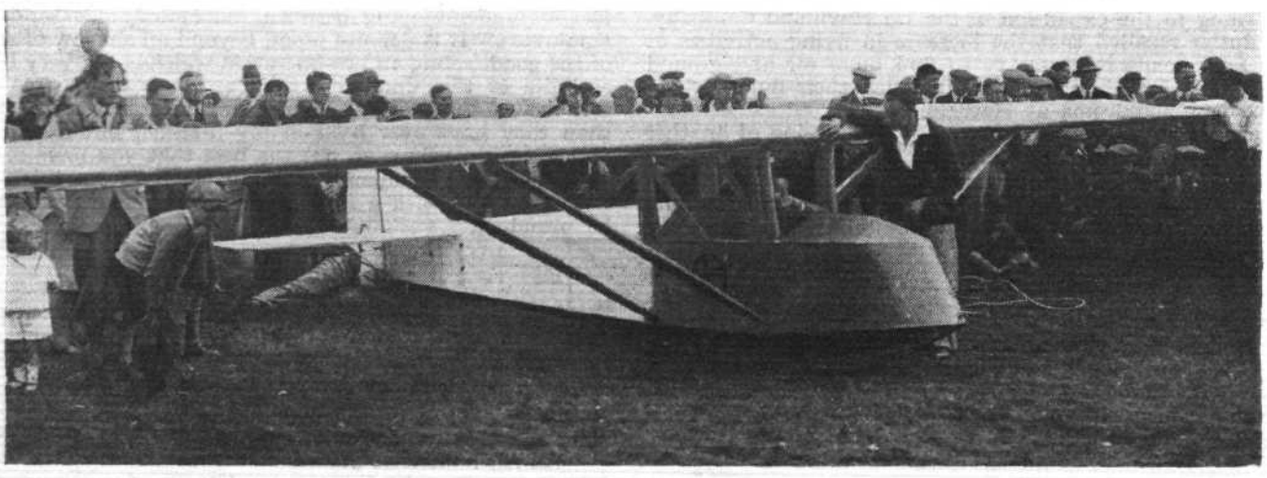
Unless a specially designed glider is used, this method imposes far greater stresses than have been designed for, owing to the much higher speed.

Such flights constitute " power flight " and cannot be done in this country without special Air Ministry permission.

The use of motor power for gliders by any method must add an element of danger, and therefore clubs are strongly advised to retain the hand-launching system until some more successful method has been evolved.

A method of launching with one car and a tow rope has been experimented with by Mr. T. E. Lander, of Harpenden, and although considerable success has been achieved, it is not yet entirely satisfactory.

AN ULSTER Gliding Club has been formed, and a glider purchased. A large and enthusiastic membership has already been obtained, and it is hoped to start regular flying before very long.



A Lancastrian in his club's Prüfling at the match between the Lancashire and London Clubs.
(FLIGHT *Photo.*)

AIRISMS FROM THE FOUR WINDS

Miss Spooner in Rome

MISS WINIFRED SPOONER and Capt. Edwards, whose flight to the Cape received a damper on December 3, arrived in Naples from Belmonte, on December 11, and were the guests of the Neapolitan Aero Club. On December 13, they flew to Rome, where they were met by Colonel Liotta of the Royal Aero Club, Prince Lancellotti, Capt. Bradley of the British Embassy, and members of the Italian Flying Corps. Next day, accompanied by Major de Bernardi, the Italian airman, they visited the Orbetello Aerodrome. Here they thanked General Balbo, Minister of Air, for his help after their recent mishap and watched some of the final preparations for the Italian flight to Brazil, which was due to start on December 15, but which was held up owing to bad weather.

Fl.-Lt. Hill Again Unlucky

FLT.-LT. C. W. HILL, who, as reported last week, resumed his interrupted flight to Australia, and reached Port Darwin, on November 10, has once again come to grief. He continued the journey, for Brisbane, the same afternoon, but had to make a forced landing at Pine Creek, and while uninjured himself, his "Gipsy Moth" was damaged. Writing to Smith's Aircraft Instruments, Flt-Lt. Hill says:

"I am writing to say how very pleased I am with the luminous instruments you kindly supplied for my flight, which, unfortunately, ended with an accident. The fact that I was able to reach Timor in 12½ days, after having lost four days through bad weather and aerodromes, is sufficient proof of their absolute reliability. The following parts of the route were flown by night:—First 4 hours, Constantinople-Aleppo; first 6 hours, Bushira-Jask; first 2½ hours, Karachi-Allahabad; first 8 hours, Allahabad-Akyab; first 5½ hours, Rangoon-Singora; first 2½ hours, Singapore-Batavia. With the exception of the flight Bushire-Jask, I flew entirely by compass and experienced no difficulty in holding the course. I very much regret that I failed to complete the flight. . . . The K.L.G. plugs used during my flight from England to Timor gave me entire satisfaction. I used the original set throughout the whole journey and the engine ran perfectly. My flying time was 122 hrs. 15 min."

Kingsford Smith Married

AIR COMMODORE KINGSFORD SMITH was married to Miss Mary Powell, in the Scots Church, Melbourne, on December 10. Mr. Ulm was best man, and Air Force officers acted as groomsmen. About 10,000 people were present in the church and the streets in the vicinity.

Canadian Railways and Aviation

As previously announced in FLIGHT, both of the Canadian transcontinental railways have now been authorised to participate with Western Canada Airways, Ltd., and the Aviation Corporation of Canada in the formation of a new organisation to be known as Canadian Airways, Ltd. The total authorised capital of Canadian Airways, Ltd., is to be 200,000 shares. The Canadian National Railway will purchase 10,000 shares in the new company, representing a total investment of about £50,000, and a similar interest is to be acquired by the Canadian Pacific Railway Company. The contribution of the railways thus amounts to £100,000, a relatively small initial investment indicating the interest of the large transportation concerns in the future of air navigation, and an intention to co-ordinate this development with the existing railway services.

Blind "Puss Moths" for Canada

THE Canadian Government has decided that pilots of the Royal Canadian Air Force shall receive special instruction in the art of "blind flying." Demonstrations of suitable aeroplanes were invited, in which various types of British and American aircraft took part. After lengthy tests, the "Puss Moth" was chosen, and the De Havilland Aircraft Company has received, through their Toronto Associated company, an order for an initial quantity of ten "Puss Moths." Delivery will begin immediately. These will be substantially the same as that owned by the Prince of Wales, except that they will have special seats to accommodate the wearing of a parachute, to comply with service regulations. "Blind flying" consists in flying solely by instruments, the pilot's view of surroundings being completely blanked off. The instruments relied upon indicate height, level flying, turns, engine revolutions and speed through the air. Ability to control an aeroplane in these circumstances is of the greatest value when flying at night, in clouds, or in fog.

Civil Aircraft for War

THE Preparatory Disarmament Commission at Geneva has passed an Article providing that each Government shall prepare an annual statement showing the total number of civil aeroplanes and dirigibles registered in its territory. Lord Cecil said that experts were unanimous that civil aircraft could easily be adapted for bombing purposes. M. Massigli, the French delegate, supported the British view, and quoted an interview said to have been given by a German pilot to a Spanish journalist to the effect that the Junkers G 38 could easily be transformed into a war machine able to carry four guns and some machine guns, with fire in all directions. The German delegate took the opposite view, but the Commission passed the Article as stated above.

No. 36 (Torpedo Bomber) Squadron, R.A.F.

THE four machines of No. 36 (Torpedo Bomber) Squadron, which is being transferred from Donibristle to Singapore, left Rangoon on December 10.

An R 101 Decoration

LORD AMULREE, the Air Minister, visited the Royal Airship Works at Cardington (Bedford), on December 11, and presented Mr. Arthur Disley, the wireless operator of R 101, with the medal of the Civil Division of the Order of the British Empire.

Aircraft for Canadian Census

AEROPLANES will be employed in the collection of returns from the northern regions of decennial census in Canada next year. It is expected that in this way the long delays which have hitherto held up the final figures will be avoided.

Gipsy Moths for Denmark

DE HAVILLAND AIRCRAFT CO., LTD., have just received an order for three metal Gipsy Moths for the Danish Royal Air Force and Naval Air Service. This is a repeat order. They have already had ten Gipsy Moths.

Mr. Sigrist's Paper

A VERY interesting paper, "Some Notes on Metal Construction," by Mr. Fred Sigrist, was given at Henlow on December 12. Mr. Sigrist discussed various forms of metal construction and illustrated the method utilized in the Hawker machines.

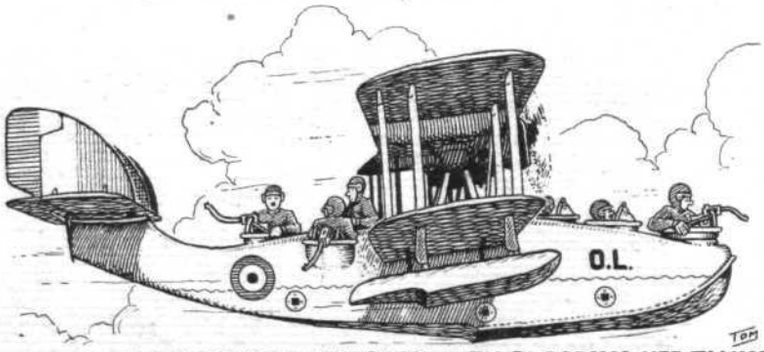
Air Mails for Central Europe and the Balkans.

IN consequence of a further change in the timetable of the French air mail services from Paris, the latest time for posting air mail correspondence from this country for Austria, Czecho-Slovakia, Jugo-Slavia, Hungary, Poland and Roumania, which has recently been 11 a.m. (except Saturdays) has now been restored to 2.30 p.m. (except Saturdays) at the General Post Office, London, and correspondingly earlier elsewhere. Air mail facilities from this country to Bulgaria are no longer available, and the only air mail service to Greece will be by the weekly Indian Air Mail, for which the latest time of posting at the General Post Office, London, is 6 a.m. on Saturdays.

Air Police for Buenos Aires

THE Government of the Province of Buenos Aires has decided upon the creation of an Air Police Force. The police themselves will be trained as pilots.

THE SUBMARINE 'SOUTHAMPTON'



TWIN-ENGINED FIGHTER FLYING BOAT ··· BY FLOODING HER TANKS, SHE CAN SUBMERGE, COCKPITS BEING FITTED WITH WATERTIGHT GLASS LIDS ··· MACHINE GUNS ARE OF FLEXIBLE TYPE ··· THIS ENABLES GUNNERS TO FIRE ROUND AND UNDER THE MACHINE.

With apologies.

AIR TRANSPORT

The "Lascoter" 5-seater monoplane fitted with a Siddeley "Puma" engine.

AUSTRALIAN AERIAL SERVICES, LTD. COMPLETES ONE MILLION MILES

IN a previous article on "Commercial Flying in Australia," we referred to the Larkin Aircraft Supply Co., Ltd., and Australian Aerial Services, Ltd., operated by them, and said we would give further particulars of this concern and its machines. We now carry out this promise, and hope the following notes and accompanying illustrations may prove interesting.

First and foremost, it may be mentioned that Australian Aerial Services (referred to henceforth as A.A.S.) recently achieved something of a record when they completed their initial million miles of air travel without injury or a single fatality to any one of the 15,498 passengers flown.

This remarkable record of safety has been obtained by keen competition of all members of an efficient staff who adhere strictly to regulations in the maintenance and operation of a well-equipped fleet.

A.A.S. started in a very small way in 1919, when, with its first aeroplane, a Sopwith "Dove," housed in a canvas hangar (used also as a general workshop) at Glenhuntly, Melbourne, educational flights of ten minutes' duration were given at £2 2s. per head.

In 1920, the company found it necessary to erect a larger hangar, and two Sopwith "Doves" and two "Gnus" brought the fleet up to five machines. A taxiplane service was also introduced, which was continued throughout the following year, when the company also inaugurated an extensive landing ground campaign.

Serious consideration was given in 1922 to the establishment of a regular aerial passenger service, and the company's tender was accepted by the Government for the inauguration of regular air-mail services in the Southern States. In 1923, extensive ground organisation was undertaken, hangars erected at Adelaide, Hay, Cootamundra, Broken Hill and Sydney, and additional aircraft were erected for the operation of the air-mail services. June 2, 1924, saw the inauguration of the first air service linking two capital cities—Adelaide and Sydney—carrying parcels and mails only; in October, three new 5-seater machines were put into the service.

New air routes were opened in 1925, linking Broken Hill to the existing service at Mildura and Melbourne with it at Hay. The number of airports were increased from nine to

The "Lascondor," a 7-seater monoplane fitted with three Armstrong-Siddeley "Mongoose" engines.

42, and three additional 7-seater machines were added to the fleet. From this period the company's services progressed to the present-day development—to which we referred in our previous article.

Here we may give a few particulars concerning some of the aircraft for which the Larkin Aircraft Supply Co., Ltd., are responsible, and which are shown in the accompanying illustrations. These are: "Lascoter" 5-seater, with Siddeley "Puma" engine; "Lascondor" 7-seater, with three Armstrong Siddeley "Mongoose" engines; "Lascowl" 11-seater, with geared "Jaguar S" engine.

The "Lascoter" was the first aeroplane designed in Australia to receive an airworthiness certificate. It had completed, up to October 16 last, over 60,000 miles of flying over all parts of Australia, carrying disposable loads up to 2,000 lb. Its top speed, as actually checked with full load, is 112 m.p.h.; empty weight, with water, 2,500 lb.; fully loaded weight, 4,500 lb. This machine is also available as a 7-seater fitted with an ungeared "Jaguar" engine, the guaranteed top speed being 140 m.p.h.

The "Lascowl" is the Anec III re-designed as an 11-seater, fitted with a geared "Jaguar S" engine.

The "Lascondor" is believed to be the first multi-engined aeroplane to be either designed or manufactured in the Southern Hemisphere. With a disposable load of 2,300 lb., it will take-off and climb to 8,000 ft. with any two engines running. The top speed is 130 m.p.h., and cruising speed 108 m.p.h. The construction is almost entirely of metal, the fuselage being built from square steel tubes of the firm's own patented type. It will be noted that the wing engines are mounted in such a position that the slipstream from these engines passes entirely beneath the wing. This feature undoubtedly results in considerably greater efficiency, and, in addition, provides greater accessibility and more satisfactory petrol feed. A fully-castoring tail wheel is provided in conjunction with independently-operated wheel brakes. The wing bracing is arranged in such a manner that the wing nacelles can be omitted with no other structural alteration beyond the fitting of a "Jaguar" engine in place of the central "Mongoose" engine, enabling this type to be offered as a single or triple-engined aircraft.

There are two "Lascowl" machines in operation—the "Diamond Bird" and "Love Bird." These machines were formerly Anec III's with Eagle VIII engines, the cabin holding six passengers. The Larkin Co. recently re-designed these as 11-seaters, the whole of the forward structure being of their patented steel-tube construction. Since completing this work, the 'planes have a total of over 330 hours each to their credit without even top-engine overhaul. A point of interest is that after 200 hours' running the two aircraft were chartered by Mr. Donald MacKay to proceed to Ilbilla, a point 400 miles west of Alice Springs, in Central Australia, to carry out survey flights over 40,000 square miles of entirely uninhabited and practically unknown country extending into Western Australia. (We described this survey in our issue for November 21 last.) About the middle of July, both machines returned safely, having experienced no trouble of any kind. The terrain over which they operated, from Ilbilla as base, is admittedly the worst in Australia, providing practically no facilities for landings anywhere. A new lake, the largest in Australia, was discovered by this Expedition, the entire mapping being done from the air.

Other Larkin machines of interest are: The D.H.50 "Wattle Bird," with geared "Jupiter XI" engine, which was entirely rebuilt by the Larkin firm for use on the Camooweal-Daly Waters service, and two of which have been put into operation. The Sopwith "Gnu," with Wright "Whirlwind J.5" engine, which was originally in service ten years ago, fitted with a 200 h.p. Bentley rotary and later a 110 h.p. Le Rhone, but which was sold two years ago to Mr. Keith Farmer—a well-known Australian pilot—and re-designed for the Wright engine.

The Larkin company have also built 32 "Gipsy Moth" machines for the Royal Australian Air Force.

That Transatlantic Air Mail Service

FURTHER developments are reported regarding the proposed Transatlantic air mail service, to which we referred the other week. It appears that an agreement has been made between the air operating companies of Great Britain, France and America, whereby the difficulty of a divided control in the operation of the service, when it is set up, has been avoided. The companies concerned are Imperial Airways, Aéro Postale Union of France, and Pan-American Airways of America; Imperial Airways would control operations in Bermuda, and Aéro Postale in the Azores. According to *The Times* aeronautical correspondent:—

"This arrangement has resolved the initial difficulties of the Pan-American Company and, strongly supported by the American Post Office, it is pressing forward its plans for opening a service in 1932. The keenness of the American Post Office on the project has been shown by its invitation of tenders for such a service. The announcement inviting tenders was made within a fortnight of the conclusion of the agreement. The conditions provided that the first stage of the route between Norfolk or Charleston and Bermuda shall be in operation by next June, but that the operating company shall receive no payment until the whole service to Europe is established. The French company, on its side, is similarly preparing to begin a service. Great Britain at the moment has taken no step either through the Post Office or through the Air Ministry to prepare for a service, which both the other countries are evidently determined to start during the next two years."

While the main difficulty of such a service at present is the production of a seaplane or flying-boat possessing the necessary performance for the 2,000 miles Azores-Bermuda section (the distances from Portugal to the Azores, 900 miles, and from Bermuda to the American coast, 700 miles, do not present any great difficulties), *The Times* correspondent points out that the United States and France are both constructing flying-boats suitable for this service and will have them ready for trial well within two years. Great Britain has no boats under construction for such a purpose, and the Air Ministry has not given any indication that it proposes to move in this direction, but it is clear that if provision were made in the next financial year Great Britain need not be behind the other nations in this enterprise.

Air Services in the West Indies

JAMAICA'S first British air mail service was inaugurated on December 10, when a machine (piloted, we understand, by Capt. A. R. Holland) left Kingston for Santiago, Cuba. This service is to form a part of a 33-hour air mail service between Jamaica and Montreal, for which Capt. Holland has already signed a contract. We also learn that Caribbean Airways, Ltd., of Jamaica, has secured the official contract to carry all outward air mail—but we do not know if this is the same concern or not.

THE HAMPSHIRE CLUB'S ANNUAL DINNER

THE Hampshire Aeroplane Club held their fifth annual dinner at the South Western Hotel, Southampton, on December 12. There was a very large gathering indeed, a gathering which, following the precedent of previous years was again larger than before, so much so that nearly 170 members and guests were present. There was great enthusiasm shown over the fact that the President, Lt.-Comm. Lord Louis Mountbatten, together with Lady Louis Mountbatten, was able to take his place as Chairman at the Dinner. During the past year Lord Louis has taken his "A" licence and Lady Louis is hoping to follow suit in the spring. After the loyal toast, proposed by the Chairman, THE REV. E. G. D. FAWKES proposed the toast of the "Club." In a few short words he showed to what an extent the club had grown since its conception and he quoted one or two amusing incidents concerning both his own flying and that of others, particularly that of one gentleman who it appeared made a habit of roosting in trees.

The REV. E. BRUCE CORNFORD, in his own inimitable fashion, replied to the toast and said how pleased they were to have their President with them on this occasion, particularly as he had gained his "A" licence. He could not refrain, he said, from voicing a sense of utter loss of their dear old friend Sir Sefton Brancker, a very gallant gentleman and sportsman and they all felt his tragic death. He then went on and alluded to the progress made in aviation, he laid stress on the fact that England was today only the fifth flying power in the world, whereas she ought to be leading. The Hampshire Club, he said, was doing its little bit and was now second only to one other club in Great Britain, having over 400 members and last year securing 41 "A" licences as against 27 the year before.

LT.-COL. L. A. STRANGE then proposed the toast of "British Aviation." He said that the Rev. Bruce Cornford had asked what was the matter with the laity and now he proposed to tell him. He felt, he said, that the majority of people in the aircraft industry had been living too much in the past and that the only way for aviation to prosper was for them to take their hats off to the past and their coats off for the future. He related a story of how one day in India he found a native sitting on the ground in the middle of an admiring crowd striking large fusees and eating them as each one burnt brightly, so he said to him "Doesn't it hurt to do that sort of thing?" "Oh, yes," replied the fire eater, "it usually does if you have to earn your own living." The moral of this, said Col. Strange should be learnt by all the people of the aircraft industry because they were at the moment afraid of being hurt. He felt that the designers had failed us in the past. If we went right back to 1914 we found the dear old "Avro" doing very nearly the same work and being, in design, very nearly the same machine as today, and this same machine with very little alteration was still actually being used by the majority of the joy-riding companies. This, he said, did not seem to point to great advance having been made in general, though it might be so in particular cases, so that taking it on the whole it did not look as if the aircraft designers had had their coats off. Engine designers definitely have had their's off, for in engines there had been very great advance made. Unfortunately, however these better engines were still pulling poor aircraft. He hoped, he said, that he was not treading on the toes of some of the designers present, but so far he had always found that whatever he asked for he was always told it would be forthcoming tomorrow. What British aviation needed, he said, was a machine which could be landed with great ease and controlled with about the same amount of instruction as was necessary with a motor car. After all, there was no doubt, he said, that in a general way flying was considerably safer than motoring. He himself was invariably happier when flying above our main roads than when travelling on them. A certain amount of skill he felt would always be required. Designers must help more in this direction and aircraft must be more fool-proof.

SIR ALLIOTT VERDON-ROE, in reply, said that during the extremely clear statistics given us by the Rev. Bruce Cornford, he noted the remark that we were the fifth power in the world as regards aircraft. No doubt this was very regrettable, but he said, when it was realised that we were governed by the world's prize idiots, he thought it was altogether remarkable that we were even fifth. In the whole of history, he felt there had only been one sensible man in Parliament and his name was Guy Fawkes. He hoped that Col. Strange's plea for designers to take their coats off would result in our getting machines with a low landing speed and many other of the desirable features which we are all wanting. He then recounted how the Prince of Wales had recently flown a well-known British amphibian machine just before making a trial flight in the largest flying boat in the world, a foreign machine, and he felt the comparison of this had left British aircraft in a very favourable position, since this said amphibian had 40 per cent. of its total weight as useful load.

LT.-COMM. LORD LOUIS MOUNTBATTEN (President of the Hampshire Aero Club), proposing the toast of "Our guests," first of all gave a brief résumé of the early days. He then said reference had been made to his absence from the club at previous dinners, and he would like to assure everyone that the only thing which had kept him away was the fact that he had been on foreign service. He said that he had always had the interest of the club at heart and had done all he could to make people keen on flying. He related that on one occasion he had had a very fat and pompous friend staying with him who had expressed a wish to fly, so that he had taken him down to the club and had asked the instructor, Mr. Swoffer, as he was then, if he would take him up. Swoffer had said, "Certainly," and they had gone out to the machine, when just as they were about to get in, Swoffer had looked at his friend for a moment and turned to the ground engineer and said, "Half a mo', just bring out the 'Gipsy'!" Lord Louis regretted that the majority of his speech had been filched by the Rev. E. Bruce Cornford, as he had himself looked up a similar set of statistics and all he could say was that those they had already had were quite correct as they tallied with the ones he himself had checked. He had, however, figures to add, the first of which was that the average maximum speed of aircraft on American air lines was 144 m.p.h., and the average cruising speed 120 m.p.h., whereas for us the figures were about 100 m.p.h. and 90 m.p.h. respectively. It had also been proposed, he said, that private licences should only be given in the States next year for machines able to fly at 130 m.p.h., whereas we in this country had very few machines with a maximum of even 120 m.p.h. This was a pity, he said, but against that we had the fact that our machines appeared to be very much safer, He then proposed the toast coupled with the names of the guests, which included, among many others, the Lord Mayor and Lady Mayoress of Southampton, Group Capt. and Mrs. Nanson (C.O. at Calshot), Comm. Perrin (Secretary of the Royal Aero Club), Mr. Hutchinson Dennis (founder of the Young Airmen's League at Bournemouth).

COUNCILLOR E. W. CROSS (Lord Mayor of Southampton), in reply, said he was very grateful to the Committee for the honour they had done him in asking him to reply to this toast. He mentioned the fact that Portsmouth had recently decided to start work on a 280-acre site for a municipal aerodrome and he thought that those present would like to know that Southampton was not lagging behind and that there was a proposal in hand at the present time for establishing an aerodrome of about 170 acres near Swathling. This aerodrome, he said, he hoped would be of service to members of the club and also to visitors from all over the country. All the speakers he felt had so far lamented the fact that aviation was not going ahead fast enough. The remedy for this lay in advertisement; the club must advertise! He proposed that machines should land in front of the Bar Gate or on the football ground when a match was just about to start or a goal was being scored, either of which expedients would cause a lot of talk and draw attention to the club. (We cannot but suspect the Mayor of laughing up his sleeve while making these remarks.—ED.) A further suggestion he would like to make would be for the club to run cheap trips to Bournemouth or London at, say, 2*s*. return, on Bank Holidays; in fact, that there was no end to similar things which might be done, any of which would be good propaganda for the club. Among his titles, he said, was hereditary Admiral of the Port, but it appeared to be a title in name only since all admirals always had a barge, but as far as he had been able to discover there was none for him, so he suggested that perhaps the time had now come to give him an aerial title as well, in which case, perhaps, instead of a barge the club might give him a machine. He reminded his listeners that the club was the second largest club in the country and he then proceeded to enumerate many of its virtues. In conclusion, he congratulated the club on having both a President and Secretary who were so keen on their respective jobs, and said that should they wish for any more suggestions as to ways in which they might advertise, he would only be too pleased to give them.

MR. R. A. N. SHUTTE, in proposing the toast of the

"Chairman," said that although they were very glad indeed to have their President with them now at last, they were doubly so in view of the fact that he now had his "A" pilot's licence. When he was asked to make this speech, he said, he felt that it was his duty to learn something about their President's flying capabilities and with this in view he had questioned their chief instructor very closely but had, however, he said, been unable to learn anything to his detriment whatever, in fact, he appeared to be a model pupil who had done all he was told to do.

LT.-COMM. LORD LOUIS MOUNTBATTEN, in replying, quoted the words of Mark Anthony who, as he lifted the flap of Cleopatra's tent, said, "I have not come here tonight on business," and he felt the same remarks applied to himself, in that he had not come here to talk. He wished, therefore, in very few words, to thank everybody for the way in which they had drunk his health and, in conclusion, there was just one thing he would like to say against the figures which had been quoted purporting to show that America was so much ahead of us, and this was that when Lindbergh crossed the Atlantic he was the 67th man to do so by air, the first 33 of whom had all been British.

THE ROYAL AIR FORCE

London Gazette, December 9, 1930.

General Duties Branch

Lt. J. H. F. Burroughs, R.N., is reattached to R.A.F. as a Flying Officer, with effect from Dec. 3, 1929, and with seny. of June 16, 1924 (substituted for *Gazette*, Dec. 10, 1929); Pilot Officer on probation P. F. Canning is confirmed in rank; Oct. 21. Sqdn.-Ldr. E. D. Atkinson, D.F.C., A.F.C., is placed on half-pay list, Scale A; Nov. 18 (substituted for *Gazette*, Nov. 18). Flying Officer J. M. Wyer, M.B.E., D.S.M., is placed on retired list at his own request; Dec. 8. Pilot Officer on probation G. B. Pierpoint relinquishes hs short-service commn. on account of ill-health; Dec. 6. Sub-Lt. M. K. Cavenagh-Mainwaring, R. N., Flying Officer, R.A.F., relinquishes his temp. commn. on return to Naval duty; Nov. 19. Lt.-Cdr. J. H. I. Wood, R.N., Flying Officer, R.A.F., ceases to be attached to R.A.F. on return to Naval duty; Aug. 10, 1929 (substituted for *Gazette*, Aug. 20, 1929).

Medical Branch

Probationary Surgeon Lt. H. T. Rylance, L.M.S.S.A. (R.N.V.R.) is granted a temp. commn. as a Flying Officer with effect from and with seny. of Nov. 19.

Dental Branch

Sqdn.-Ldr. P. E. Brown, L.D.S. (Majr., Army Dental Corps), relinquishes his temp. commn. on return to Army duty; Nov. 24.

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

Pilot Officer A. Dewsbury is promoted to rank of Flying Officer; Dec. 10. Flying Officer R. H. Maw of the Special Reserve is promoted to rank of Flt.-Lieut.; Nov. 2. Flying Officer M. R. Manks is transferred from Class A to Class C; Oct. 16. Flying Officer M. F. Ogilvie-Forbes is transferred from Class AA (ii) to Class C; July 17. Flying Officer S. H. G. Trower relinquishes his commn. on completion of service; April 1 (substituted for *Gazette* Dec. 2).

AUXILIARY AIR FORCE

General Duties Branch

No. 600 (CITY OF LONDON). (BOMBER) SQUADRON.—The following to be Pilot Officer: G. F. Anderson; Nov. 10.

PRINCESS MARY'S ROYAL AIR FORCE NURSING SERVICE

Matron Miss K. C. Watt, R.R.C., is appointed Matron-in-Chief; Nov. 29. Miss J. M. Cruickshank, C.B.E., R.R.C., relinquishes the appointment of Matron-in-Chief, and is placed on the retired list; Nov. 29.

CROYDON WEEKLY NOTES

ANOTHER week of fog. The transport services have all suffered. Passengers during the week numbered 253 and freight 34 tons. However, the Indian mail was the biggest ever handled at Croydon and weighed almost a ton, consisting of about 70,000 letters. It was quite an interesting and assorted cargo, for, in addition to all this mail, there was a consignment of live lobsters and fresh brussels sprouts for a Cairo hotel. No doubt, the humorist will make appropriate noises, but, seriously speaking, there is a very wide scope for the quick transport of perishables by air. Though this is being realised, much greater use might be made of the Air Lines.

No services will be run by Imperial Airways on Christmas Day, but they will be normal throughout the rest of the holiday period. Plans are being drawn for an extension of the personally-conducted aerial tour scheme during the next tourist season. By this, Americans in a hurry will be able to see the whole of Europe in a week and most of England in a day. A further improvement has been suggested to Imperial Airways, whereby a tourist might be taken up on a high-altitude machine and see all England at a glance. It is thought, however, that there is no American far-seeing enough to get the full benefit of the arrangement.

Much has appeared in the daily press lately about a trans-atlantic service to be operated by Imperial Airways in conjunction with one of the big American air transport companies. The route was said to lie through Lisbon, the Azores, and Bermuda. It sounded like a newspaper fantasy, built up out of a visit paid to the United States by Major Woods Humphery. It appears that Imperial Airways see that air transport ought to have a share in this richest route of all. There are, of course, many technical difficulties to be solved, the greatest of which is probably the building of serviceable flying boats with both range and pay load. The problem is being tackled and when the route does eventually open, there are clear understandings that British interests will be safeguarded [We refer again to this service elsewhere in this issue.—ED.]

Whislt yarning with Mr. Jahn, the popular manager of Deutche Luft Hansa, we found the name of this week's celebrity passenger. It is Herr Maggersuppe, the Soaring Star, who returned to Germany by D.L.H. last Wednesday.

Personal Flying Service, Ltd., have issued an attractive little pamphlet describing their operations, which they call Flying "à la Carte." They make a point of engaging pilots not only for their skill and experience, but also for their personal charm. Should a business man who has hired a machine to take him abroad, require congenial company in the evening, then the pilot can provide it. Or a party of aerial tourists visiting Paris or Vienna or Addis Abbaba, will find that in the pilot they have also a guide and courier—someone who can show them the lesser-known and more intimate places. Personal Flying Service could have found none more suitable than Major Clarke and Captain Styran. Their fleet consists of a Junkers F13, a Sikorsky Amphibian and a Desoutter, which they dock at Croydon.

Though the transport side of the aerodrome is slack, the production side is very busy. The Robinson Aircraft Co., Ltd. report that they are now completing the jigs and tools for rapid quantity building of the Redwing II.

Cirrus Aero Engines, Ltd., are having a big pre-Christmas rush to clear up outstanding work. We have recently mentioned the way the foreign demand for the Hermes II has developed. They are now finishing a batch of engines for Japan, where they are to be fitted into the Ishikawajima training machine. Mr. Johnson, one of the Cirrus Company's ground engineering staff has, we are told, just acquired a Cirrus Avian for his private use. He is a very useful and popular G.E., who has made himself well liked at the flying meetings where he has represented his firm.

We are all sorry to have lost Mr. T. Rowntree, the Inspector-in-Charge, A.I.D., at Croydon, but we must congratulate him on his promotion to the position of Assistant Chief Inspector at the Air Ministry. However irate, abusive and ill-mannered others might become in discussion, Mr. Rowntree could always remain calm and in command of both his feelings and the situation. He will always be looked up to for his personality and charm, for he escapes the common error of investing himself in a cloak of pompous superiority.

M. L.

MODELS

THE MODEL AIRCRAFT CLUB (T.M.A.C.)

Inaugural Meeting, 4th Wing, T.M.A.C.—Sunday, December 14, at Hackney Marsh will long be remembered as providing one of the most delightful flying meetings ever experienced. Fortune favoured as to the weather, which, though not ideal, was decidedly better than for many weeks past.

One or two members of No. 12 Squadron were flying by 9.30, and from then until 11.30 there was a continual stream of arrivals, visitors coming from as far afield as Wembley, Hendon, Hampstead, and Peckham. Twenty-five machines were flown, and at one time 20 were in the air together. They were of almost bewildering variety: an 8-in. balsa tractor which looped, and was eventually bitten in half by a dog; twin-pusher, tractor spars, midgets; high and low-wing, cantilever and strut-braced cabin types and scale types, including two beautiful Puss-Moths—all had their share in the proceedings. Several members had worked hard to have a new model ready for the occasion.

At 11.45 there was a temporary lull in the flying activities, while the chief event of the day was enacted. Members grouped themselves in their respective squadrons—10, 11, and 12—and in the presence of a large and keenly interested crowd, Mr. W. R. Burnett, chairman T.M.A.C., read out the inscription on the beautifully illuminated Certificate of Inauguration, which he then handed to the wing-commander, Mr. M. R. Knight. Mr. Knight thanked everyone present for their attendance and urged 4th Wing to show their appreciation by making the fullest use of the excellent ground available. The models were then "revved up," and at a signal from the organising secretary, Mr. Yeomans, the entire 4th Wing launched simultaneously and were away on their career.

Then followed two duration contests, in which additional points were given for various desirable features—stability, realistic appearance, landing, etc.—in accordance with the new T.M.A.C. competitions basis. The first, for 4th Wing members, was won by Miss Briggs with "Kittiwake 1"; the second, for visitors, resulted in a victory for Mr. Debenham with CHD III—two "high-wing" wins! Messrs. A. E. Jones and Yeomans kindly provided two prizes of model-making materials.

Some idea of the general enthusiasm may be gathered from the fact that on a cold morning, lunch was forgotten and it was 2.15 when the meeting reluctantly broke up. A full-size Puss Moth, flying over at about 100 ft., sped the departing enthusiasts on their way.

Flying will take place each Sunday at 10.30, and visitors (members or otherwise) are assured of a hearty welcome. The nearest bus route is No. 6. Alight at the terminal point, Hackney Wick, walk along Gainsborough Road, turn left into Lea Conservancy Road, turn right over Canal Bridge, and you are at the emergency landing ground for aircraft, which is the field used.

BOURNEMOUTH MODEL AIRCRAFT SOCIETY

New Members.—The following have joined the Society as Senior members: Messrs. R. Ledger, G. F. Baster, J. Handley.

General.—Although no organised flying has taken place during November, several members have taken the opportunity of testing their machines. Mr. A. Coach crashed his heavy-weight biplane (built prior to joining the society); Mr. W. Ives has fitted his Reynold-type spar model with a twin gear; Messrs. Hunt and Baster are both going ahead with the construction of fuselage models which comply with the S.M.A.E. formula. The latter member has, in addition, ordered two models from America, which he hopes will prove useful to the society.

Meetings.—The first indoor meeting of members took place on November 28 at the residence of Mr. H. V. Church, who kindly placed his spacious dining-room at the disposal of the members.

The early part of the evening was spent in passing certain rules, by members' vote.

Mr. Geo. Baster then showed the members some samples of wood on which simple, but instructive tests were carried out. Mr. Hunt gave a brief description of his miniature four-cylinder engine, which has a $\frac{3}{8}$-in. bore and $\frac{1}{4}$-in. stroke and weighs but a few ounces. Mr. J. Handley contributed with some information concerning compressed-air motors, after which Mr. A. Coach finished off the evening with a humorous description of flights made by his heavyweight biplane, which, he said, "wrote off" a prop and undercarriage on each landing!

The meeting ended with an expression of thanks to the hon. treasurer (Mr. A. V. Church).

Members will receive notification of next meeting. Hon. Secretary: H. F. Weller, 18, Madison Avenue, Bournemouth.

* * * *

PUBLICATIONS RECEIVED

Aeronautical Research Committee Reports and Memoranda: No. 1303 (*E.*39). Torsional Vibration of Crankshafts: Beardmore "Tornado" Airship Engine Investigations. By B. C. Carter. July, 1930. Price 3*s.* net. *No.* 1336 (E.40). The Application of Dimensional Relationships to Air Compressors, with Special Reference to the Variation of Performance with Inlet Conditions. By R. S. Capon and G. V. Brooke. June, 1930. Price 1*s.* 3*d.* net. H.M. Stationery Office, Kingsway, London, W.C.2.

The Navy League Sea and Air Map of the World. London: George Philip and Son, Ltd. Price 5*s.* 6*d.* net.

Amendment List No. 11 *to Air Publication* 1208. *June*, 1930. H.M. Stationery Office, Kingsway, London, W.C.2. Price 1*d.*

Aviation Engine Examiner. By Major V. W. Page. New York: Norman W. Henley Publishing Co. Price 3 dols.

* * * *

NEW COMPANIES REGISTERED

B. N. AIRCRAFT, LTD., Heston Air Park, Hounslow.—Capital £2000 in £1 shares. Agents for the sale and purchase of and to deal in aeroplanes, seaplanes and aircraft of every description, aeronautical engines and spare parts, etc. First Director: A. D. S. Barr (director of Speedcraft, Ltd.), 100, Farnaby Road, Shortlands, engineer.

KLEMM-HALL AEROPLANES, LTD.—Capital £50,000, in 170,000 6 per cent. non-cumulative preferred ordinary shares of 5*s.* each, and 150,000 deferred shares of 1*s.* each. Under agreement with Ertia Trust, Ltd., to manufacture, sell, and let on hire aeroplanes, seaplanes, and aircraft of all kinds, and the component parts thereof, to build and maintain hangars, &c. First directors: D. G. Hall, J.P., "Gwentland," Penarth, Glam (chairman of Hydrogen, Oxygen & Plant Co., Ltd.). W. T. Harvey, 20, Carlton Road, S.W. (joint managing director of Acetate Products Corporation, Ltd.). Brig.-Gen. A. Huggins, C.M.G., D.S.O., &c., 91, Lexham Gardens, Kensington, W.8. (formerly director of Aircraft and Equipment, Air Ministry). Solicitors: Herbert Smith, 62, London Wall, E.C.2.

* * * *

AERONAUTICAL PATENT SPECIFICATIONS

(*Abbreviations*: Cyl. = cylinder; i.c. = internal combustion; m. = motors. The numbers in brackets are those under which the Specification will be printed and abridged, etc.)

APPLIED FOR IN 1929

Published December 18, 1930

24,699. F. E. A. BAMBRIDGE. Braking apparatus. (338,495.)
25,195. W. E. GRAY. Undercarriage for aeroplanes. (338,514.)
25,196. W. E. GRAY. Undercarriage for aeroplanes. (338,515.)
25,448. M. DE KOK. Wheels for aeroplanes, etc. (338,561.)
25,580. A. FOCHLER. Flying machines. (338,590.)
26,077. R. CHILLINGWORTH. Aircraft. (338,615.)
27,055. W. V. GILBERT. Aircraft. (338,632.)
28,355. SPERRY GYROSCOPE CO., INC. Gyroscopic compasses. (339,250.)
32,179. F. G. HELMORE. Aircraft. (338,635.)
32,485. H. and M. FARMAN. Testing-plants for i.c. engines. (338,697.)
35,267. R. J. ROBERTSON. Gliders or other aeroplanes. (338,728.)
39,732. L. BLERIOT. Aircraft. (338,783.)

APPLIED FOR IN 1930

Published December 18, 1930

3,322. GOODYEAR-ZEPPELIN CORPORATION. Bulkheads for airships. (338,809.)

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